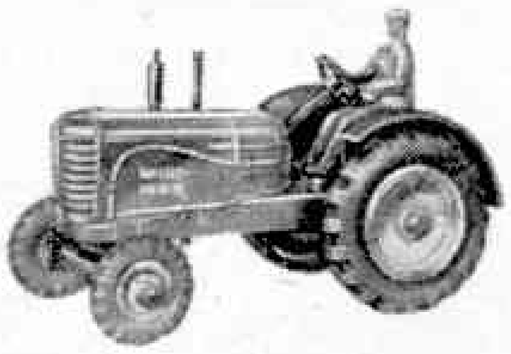
VOL. XXXIV. No. 6 JUNE 1949

MECCANO MAGAZINE

YACHTSMEN

6D.

DINKY TOYS



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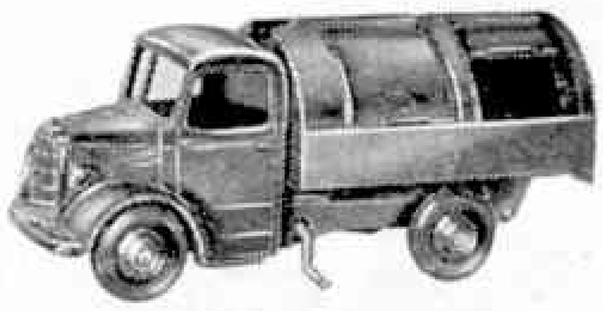

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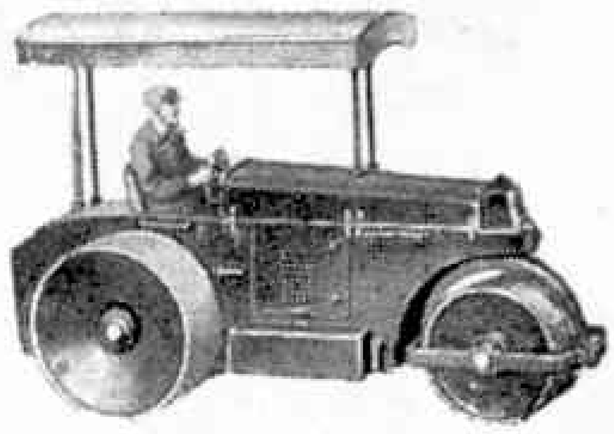

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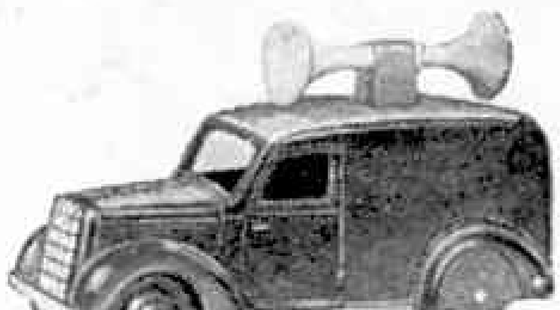

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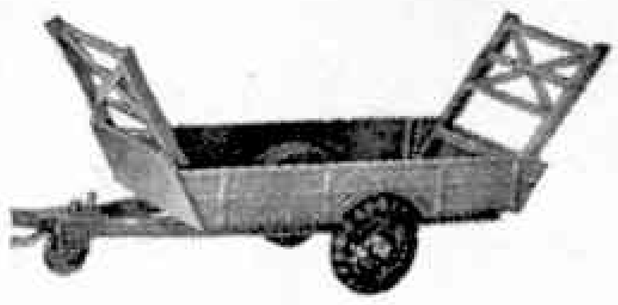

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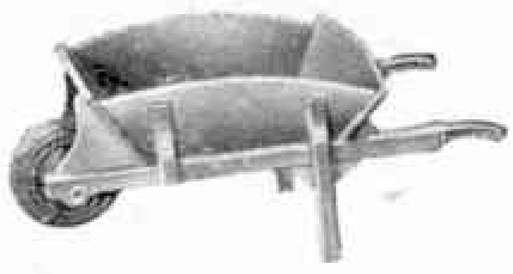

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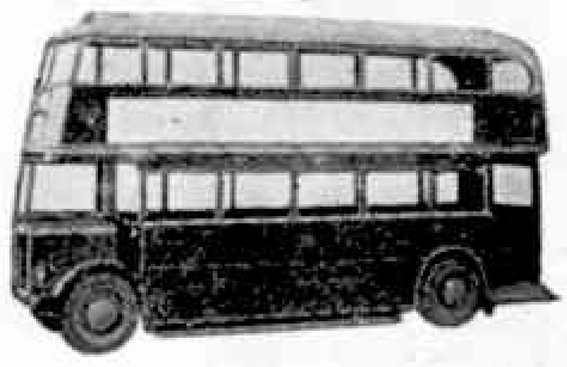

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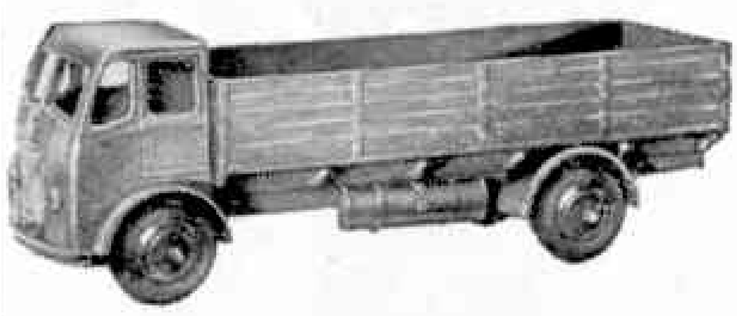

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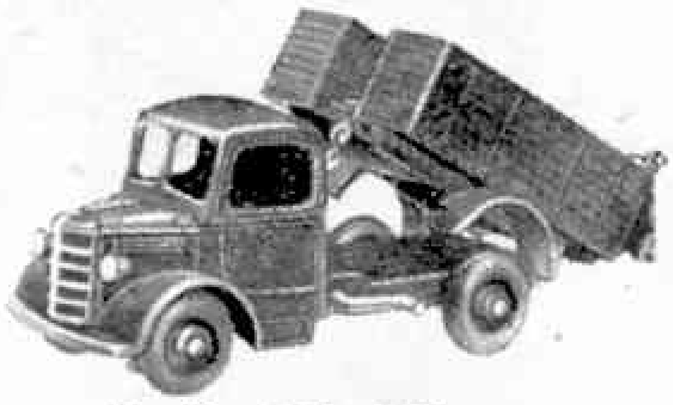

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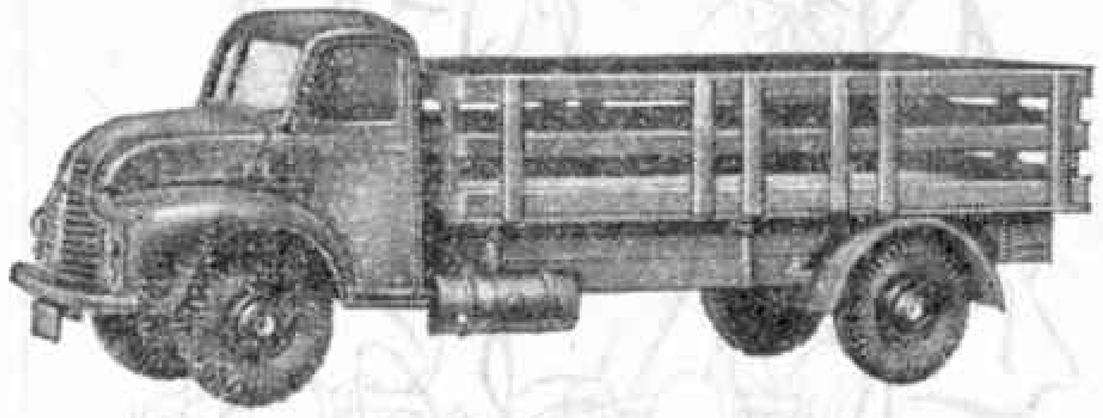

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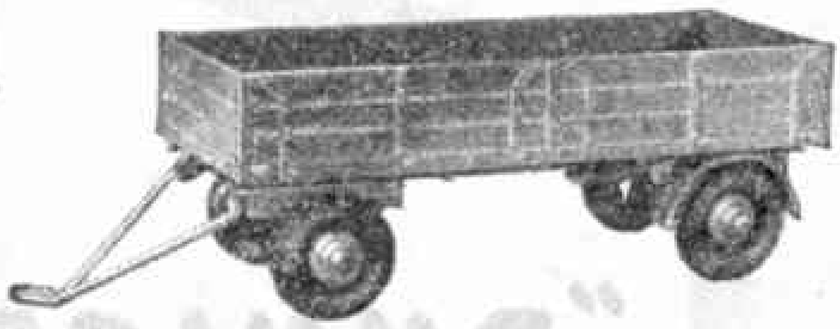

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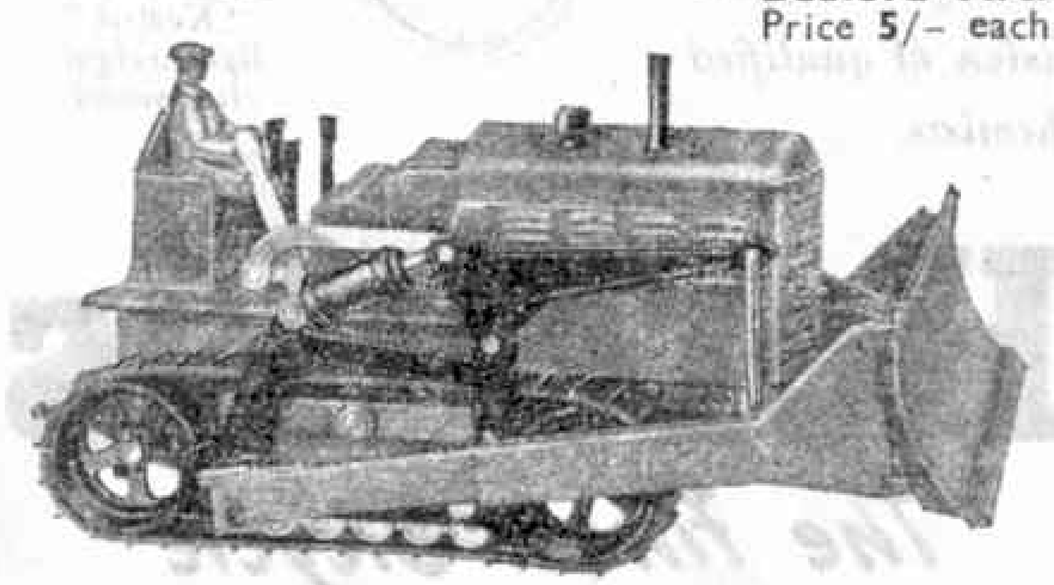

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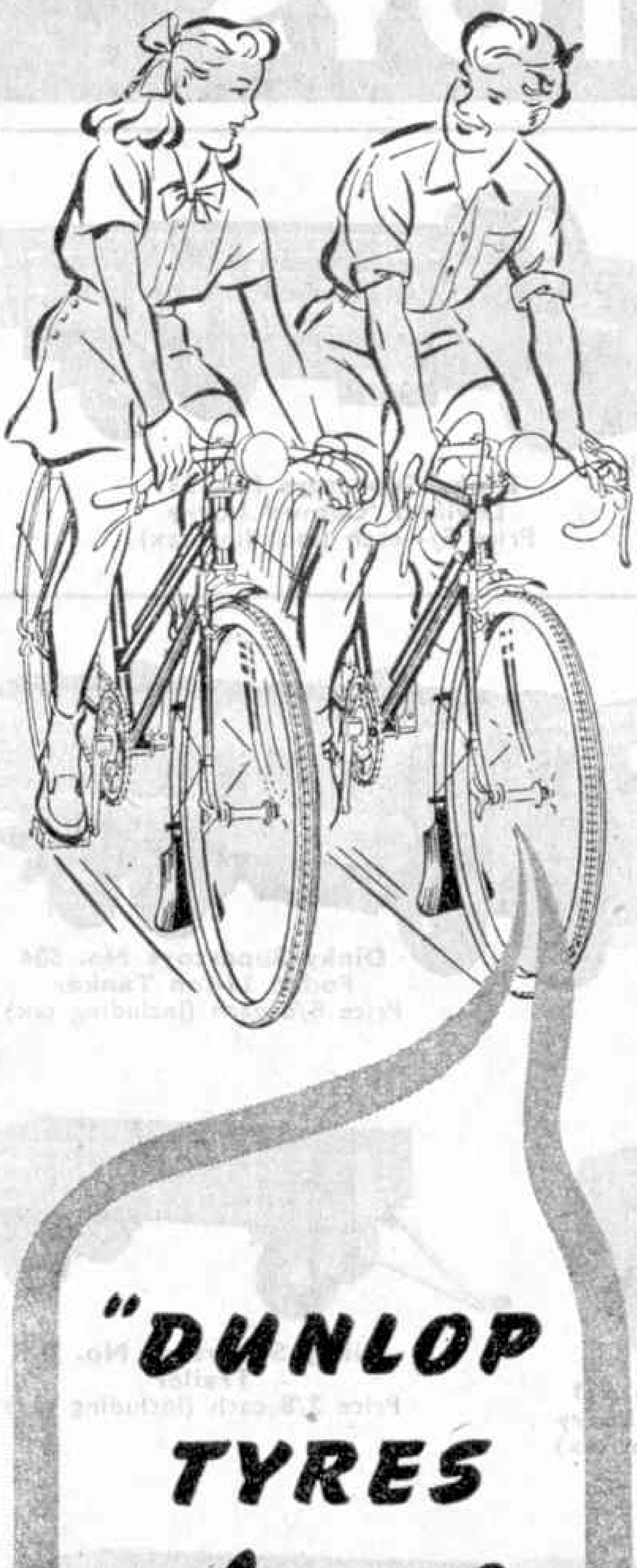

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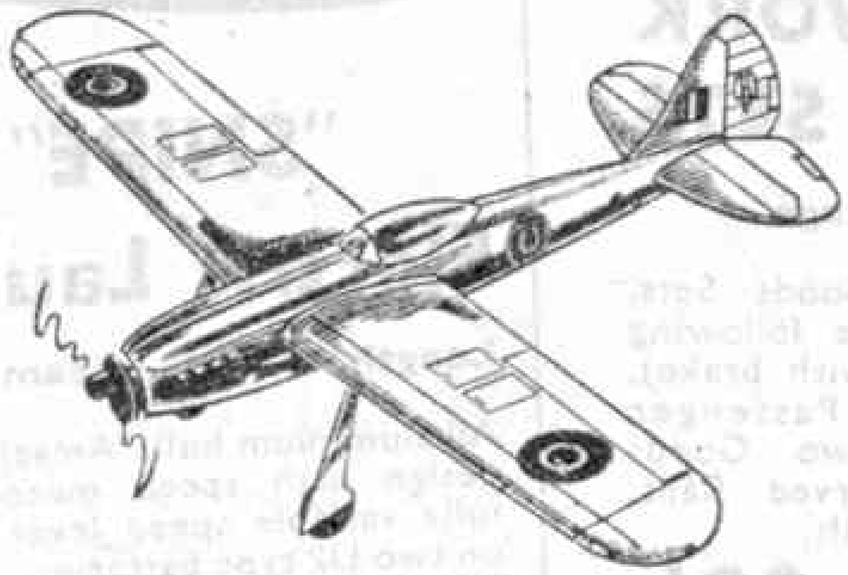

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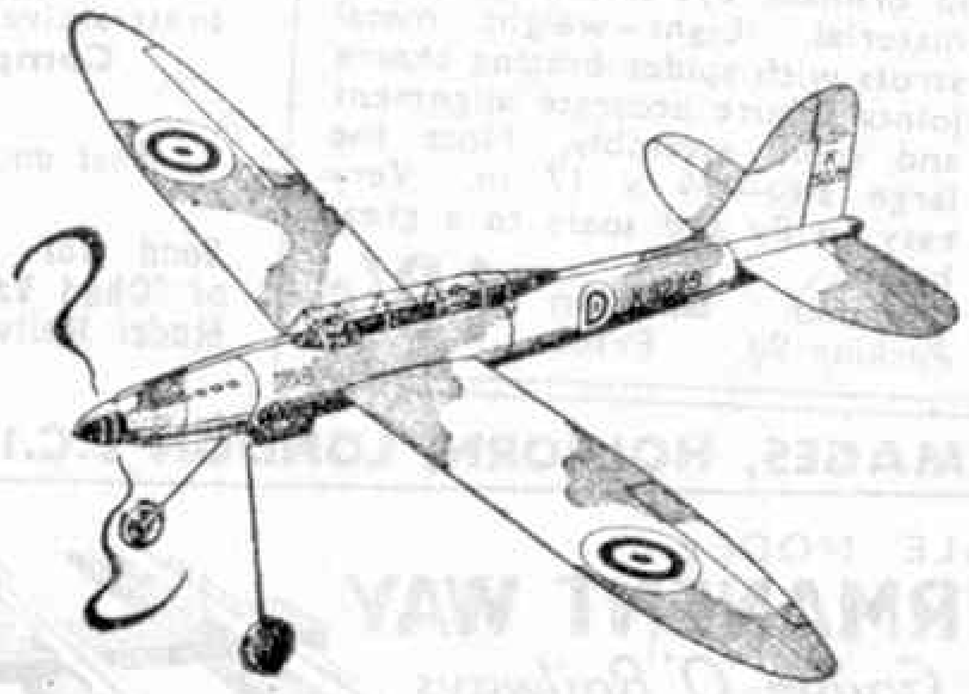

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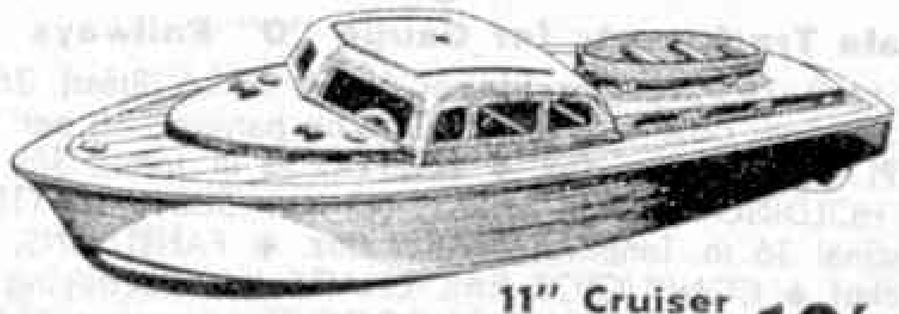

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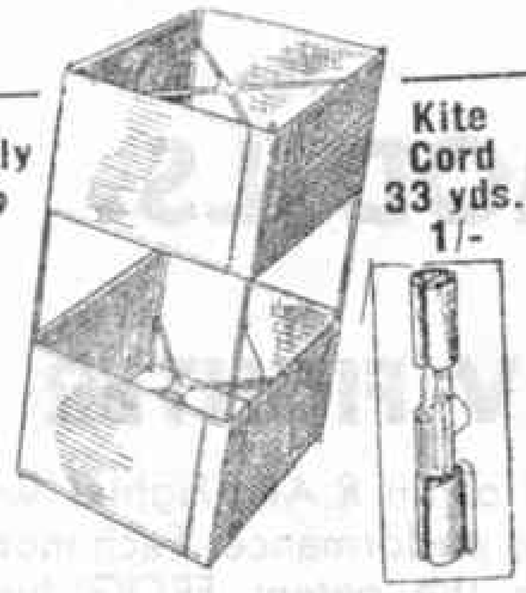

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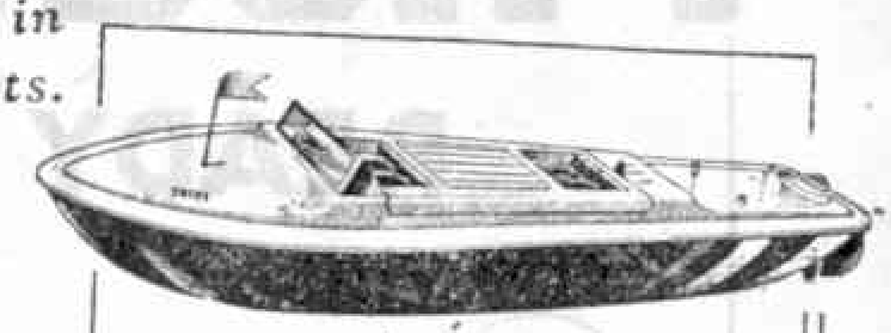

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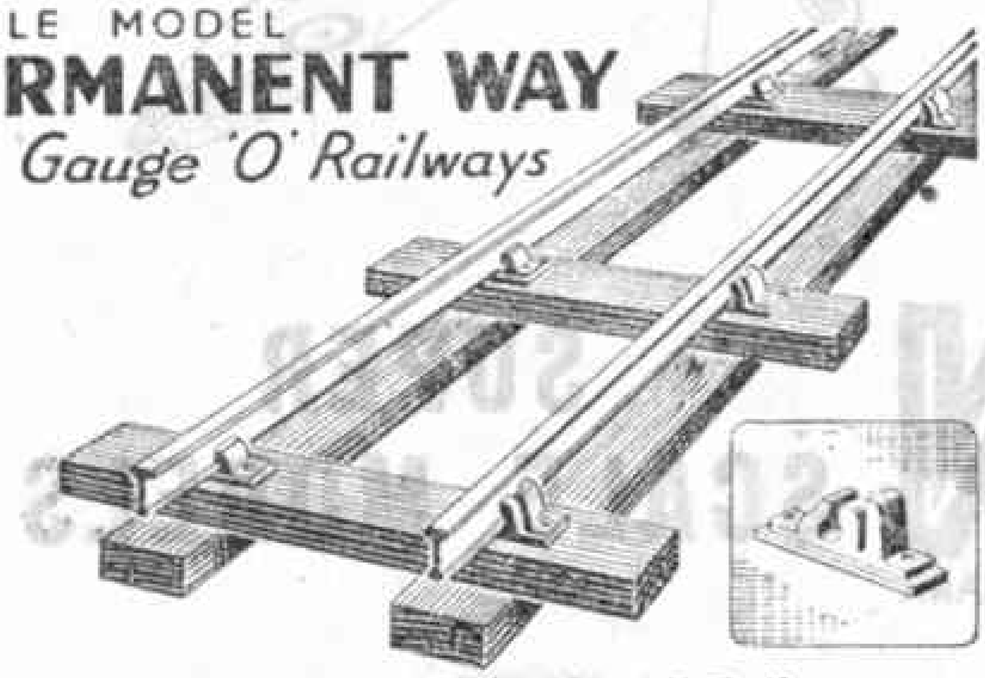

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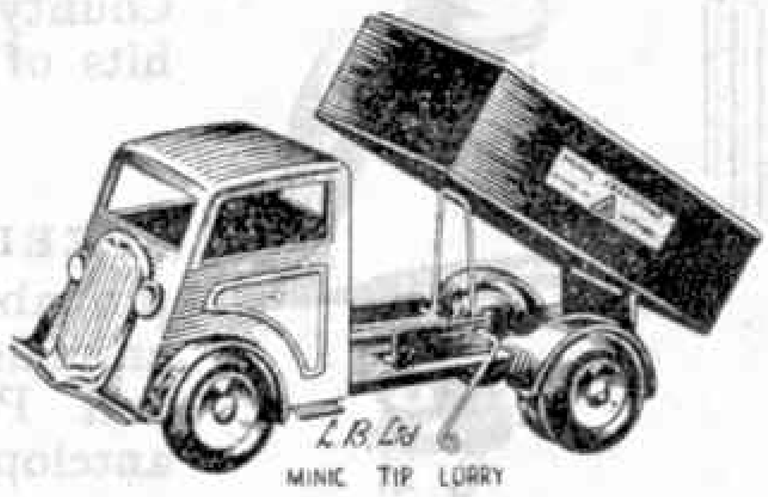

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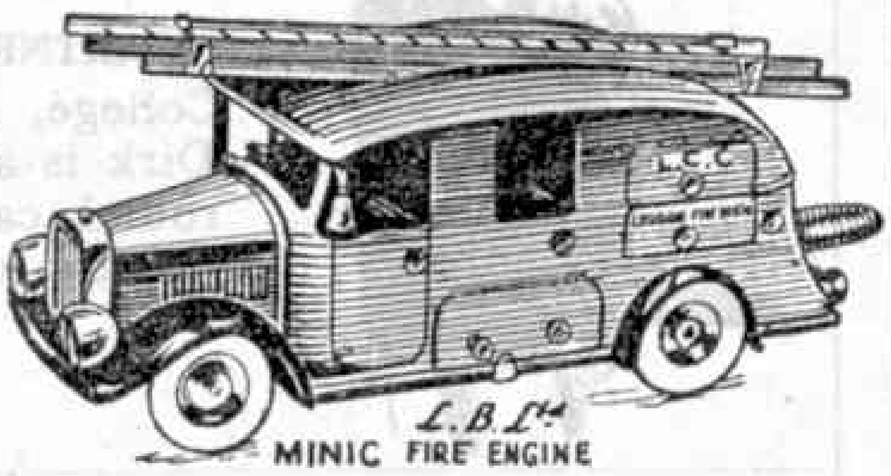

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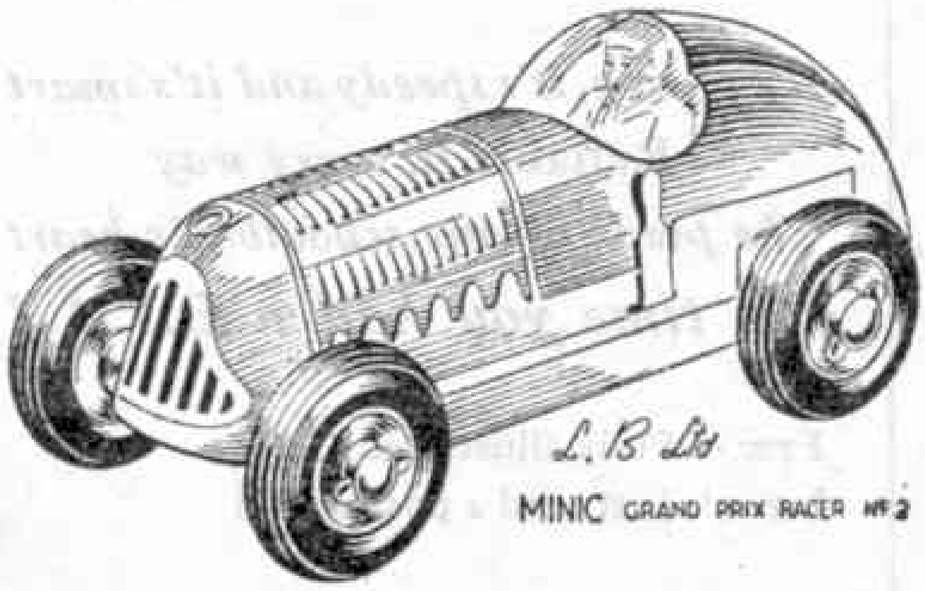

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MECCANO MAGAZINE

Editorial Office:
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Vol. XXXIV
No. 6
June 1949

With the Editor

Ship-Models

Whether interest in ship-models begins with trying to find out how a miniature of a three-masted vessel, complete with rigging, ever got inside a bottle, or merely with whittling crude craft from any handy piece of wood, it certainly persists, and good models everywhere have their enthusiastic admirers of all ages. Many sailormen have given hours of their spare time to the construction of models of ships they have sailed in, and it is not surprising to find that captured French sailors of the Napoleonic era employed their enforced idleness in this way. Some of their wonderful models are illustrated on page 228, on which appears an article describing them and explaining how they came to be made.

Shooting and Mapping

We are all familiar with what are known as Ordnance Survey maps, but how many of us know why these official maps have this name? The word "ordnance" means artillery, and at first glance there seems little connection between shooting and mapping. The explanation is simple.

At the time of the rebellion of 1745, when the Young Pretender made the last effort to seize the throne for the Stuarts, the Army authorities realized that they could not give their Generals reliable maps, and decided that something would have to be done about it. The Master-General of Ordnance was given the task of surveying the country and so the mapping of Great Britain and Ireland began under military control. The Ordnance Survey is now a department of the Board of Agriculture, but the old name continues and is a guarantee of the highest accuracy and quality.

How the surveyors set about their task is explained in an article on page 210 of this issue, and this will help readers to understand the meaning of mysterious columns that are to be found on hilltops, certain steel towers set up in flat country, and various marks or stones on walls and in prominent places in built-up areas, all of which are reference points used in making these splendid maps. The removal or defacement of these points is rightly forbidden, and the survey officers must be allowed to enter any place in which they wish to make measurements or set up their marks. We realize how valuable this work is when we ramble or motor through the countryside with the maps as guides, and they have many other uses that are unsuspected by most of us.

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Field party at work in a London suburb.

Mapping Britain

How the Ordnance Survey Works

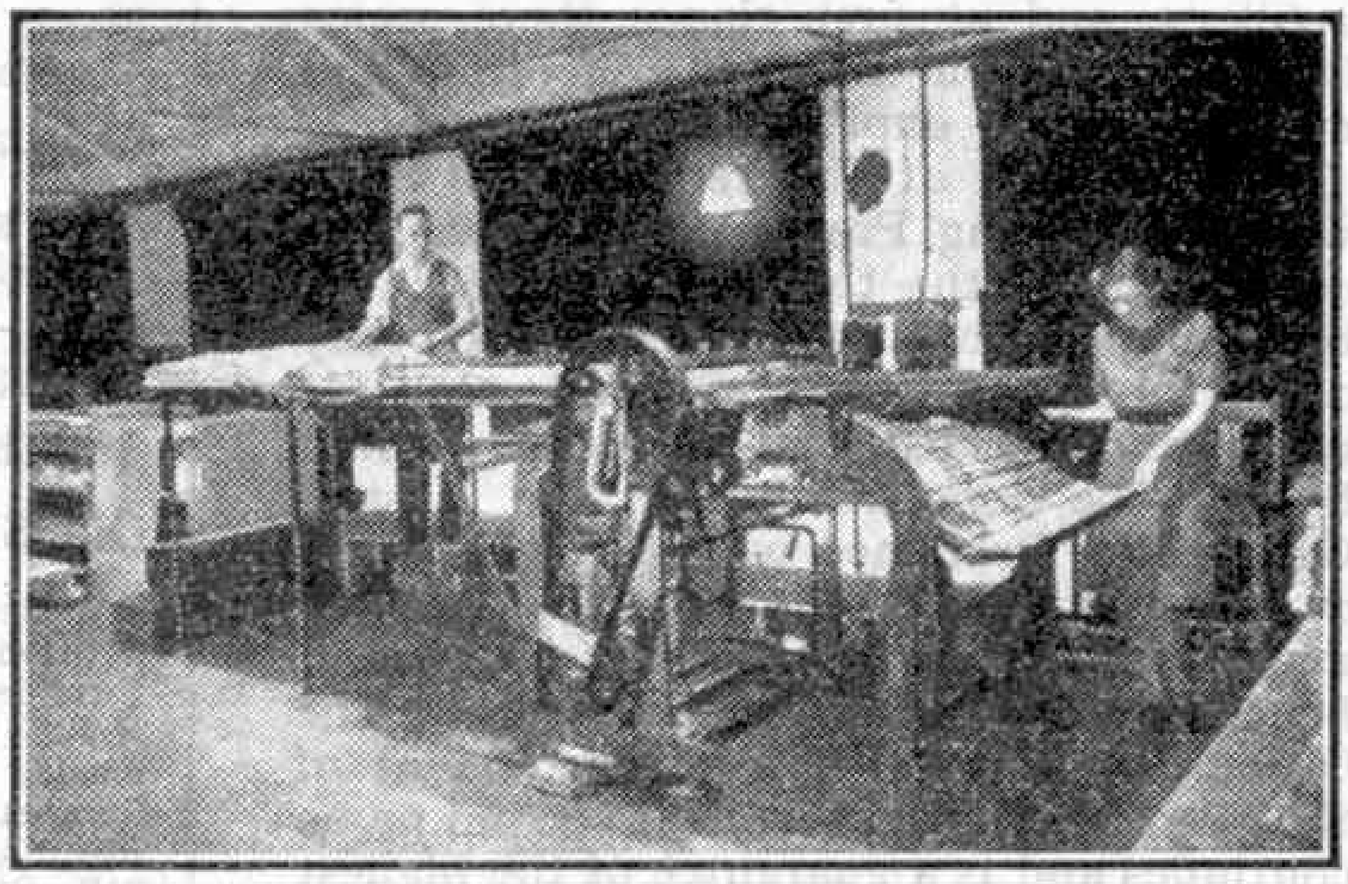
By James Worth

TO re-map most of Great Britain accurately, mile by mile and yard by yard, suggests a very long and laborious task. And indeed it is so. But a large and enthusiastic army of Ordnance Survey experts are now making good progress with the biggest mapping programme that has been undertaken in this country for the past 30 or 40 years. Besides revising thousands of its own existing maps and preparing many new ones, the Ordnance Survey, as the chief authority, provides up-to-date material to all the other British map publishers.

Although Britain has been more thoroughly mapped than any other country of the world, most of the 51,000 basic Ordnance sheets have become seriously out of date since the first World War. This is hardly surprising, for in the 20 years after 1918 building development took place on a rapid and unprecedented scale, while a highly trained Ordnance Survey staff was drastically reduced in the interests of national economy. As a result, our map-makers could not hope to keep pace with all the changes.

A start was actually made on the revision of the National map in the late 30s, but another war came before any results could be shown. Immediately hostilities began all civilian mapping came to an abrupt standstill, as the staff was switched over to vital military duties, and during six years still more changes occurred all over this island, with airfield construction, bombing and so on.

All this will help to give you an idea of the magnitude of the job on hand, and explain why the map men will be busy for many years to come. Since the war large numbers of new men have been trained for this interesting work. Of the four thousand now employed, about two-thirds form the field survey parties and



A map folding machine at work. This is the last stage in the production of Ordnance Survey maps. The illustrations to this article are reproduced by courtesy of the Ordnance Survey.

revising teams outdoors. The rest are engaged on the various stages of map reproduction at the Ordnance Survey offices at Chessington, in Surrey, and Southampton.

The main task at present is to complete the revision of the basic Ordnance maps. These comprise a detailed reference map of Britain on the large scale of 25 in. to the mile, as against the popular one-inch cycling and footpath maps with which most of us are familiar. The basic maps show literally everything of significance on the surface of Britain's landscape; every building, every road, track and footpath, and even the different kinds of trees to be found growing in the woodlands. It is from these elaborate plans that the various small and medium scale maps are reproduced and re-drawn, although the one inch series is now being revised separately.

Yet even the 25-inch maps are not the most detailed made. The Ordnance Survey programme includes the production of entirely new town plans on twice the basic scale, that is on a scale of more than four feet to the mile. These plans, which will show the position of every house and garden wall in every street, will be of the greatest value to local authorities, and all who are concerned with town planning, new housing schemes or industrial development. Nor will they be allowed to get out of date, as they will be revised constantly by surveyors living and working in each district.

While the general principles of map-making have remained the same for many years, new scientific methods and wonderful plotting instruments help to ensure that the new maps will be dead accurate, or as near so as not to matter. Mathematical calculations, which play an important part in the work, are now checked and re-checked by mechanical computation. Moreover, all map plotting and drawing is done straight on to metal squares instead of on paper, and this obviates the risk of distortion.

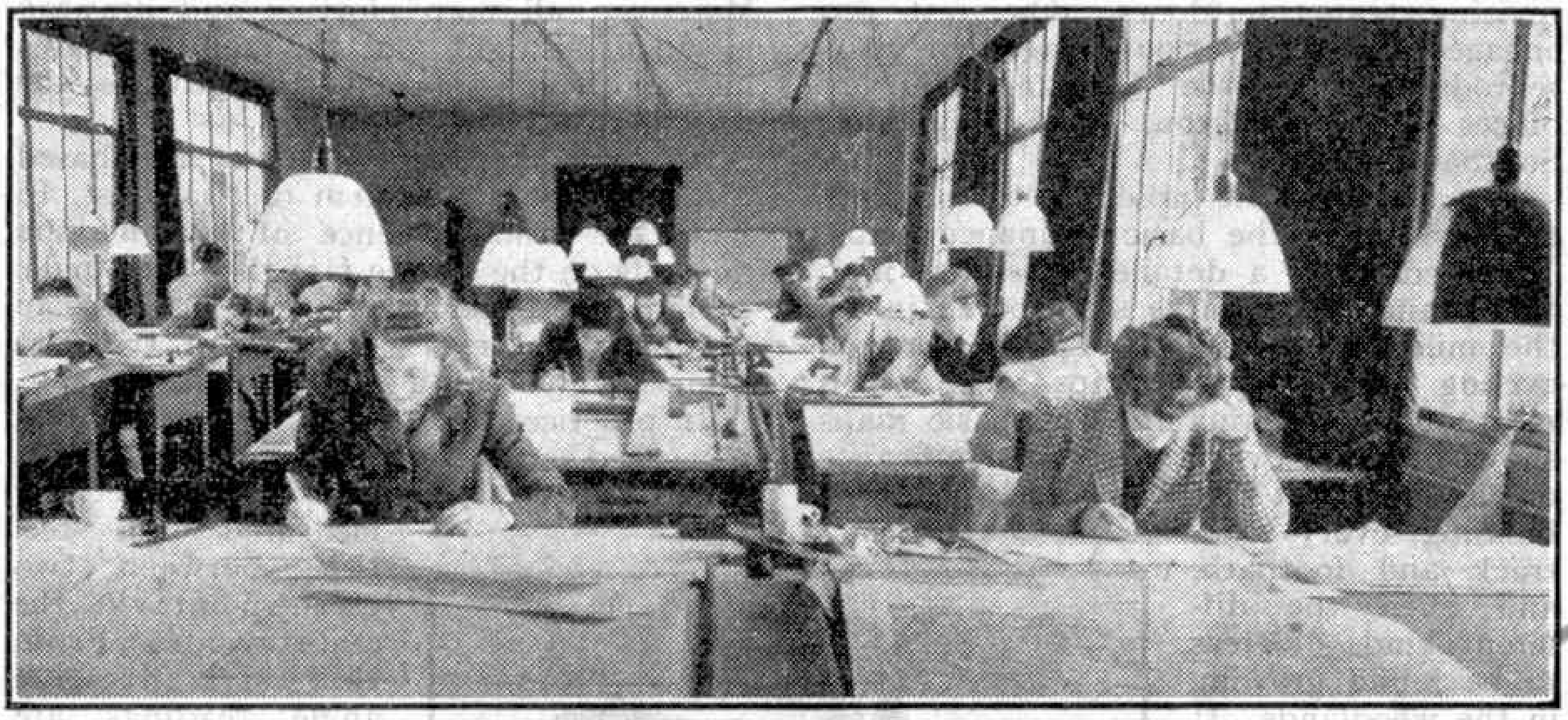
All our maps, of course, are based primarily upon a system of triangles. In fact, the whole science of map-making depends on the simple fact that a triangle, unlike any other geometrical figure, can never be distorted. So without triangles there could be no accurate maps.

In practice, the method of triangulation is worked out in the following way. First, the base line of the triangle is precisely measured with steel tape between two given points in the countryside. From this straight line angle readings are taken with the theodolite, the surveyor's sighting instrument, on some fixed point, such as a hill top or a church spire, which is selected as the apex. Then by simple calculation both sides and the area of the triangle are measured. The margin of error in present-day surveying is infinitesimal. It is not more than a quarter of a second of an angle, or the equivalent of about one inch at a distance of 12 to 13 miles.

A field surveyor of the Ordnance Survey taking readings with a theodolite.

From the first measured triangle can be built up a continuous network such as that which covers Great Britain to-day. What is known as the "Primary Triangulation" of this island was actually begun in 1792, the year after the Ordnance Survey had been set up by the Government to prepare a military map of England and Wales on a scale of one inch to the mile. The larger scales were not introduced until much later. The original base line was measured over five miles between Hounslow Heath and Bushey Park, in Middlesex, but to-day all Ordnance measurements and calculations are based upon two lines, one on Salisbury Plain and the other in Scotland.

Under the Primary Triangulation, which



In the map drawing office at Ordnance Survey headquarters.

took 70 years to complete, the country was divided into some 250 triangles, each having sides 25 to 30 miles long. But gradually these original triangles have been broken down into much smaller ones, allowing for considerably greater accuracy in surveying than was thought possible in bygone years. All the new maps, in fact, are guaranteed accurate to within three feet.

There are hundreds of concrete pillars, four or five feet high, scattered widely about the British countryside to-day. You may have come across some of them on the hill tops, where as a rule they are most clearly seen. Each of these pillars marks the corner of a measured triangle, and each appears on every published Ordnance map as a tiny open triangle coloured red. They are the fixed points from which surveyors take their observations of the various features of landscape that will form the skeleton of the detailed map.

Surveyors take readings and measure angles between hill tops wherever the nature of the country makes this possible, and all such readings are checked from opposite points by means of heliograph rays. Before the war much of this work was done at night with the assistance of beacon electric lamps.

In quite flat countryside, where tall trees or buildings may obstruct clear views over the landscape, temporary observation pylons are set up at vantage points. Some of these towers, constructed of latticed steel, are over 100 ft. high, but they are so designed that there can be no risk of any swaying movement while sighting is in progress. Church towers were formerly used for this purpose, but they had many disadvantages which the temporary pylon has overcome.

Much of the present mapping work, however, is being concentrated in and around the towns and cities, where changes have been most widespread, and especially in places that suffered heavy bomb damage during the war. In a built-up area control at close intervals is necessary, so the town is broken up into convenient areas by a traverse framework. From fixed points within this framework the field parties measure straight lines through the streets with a surveyor's chain, and also measure off the distances of objects at right angles to the chain.

The fixed points of the towns, known to the experts as "Revision Points," are located on stone walls, kerbstones or anything that is likely to remain fixed for a number of years. Each is given a reference number, which appears in the key maps of the Ordnance Survey, and is photographed together with a board showing that number. When it is necessary to revise a town plan, or any section of it, much time and labour will be saved by the rapid location of fixed points from which any revision must begin.

Most of what has been said so far refers to areas where extensive developments or other considerations have made fresh trigonometrical surveying necessary. But in those rural districts where little change has taken place since the last survey revisers go over the ground very thoroughly with copies of the existing map to mark in whatever corrections may be necessary. Since every detail of landscape and building, every road and footpath must be checked up, it may take a reviser many weeks to cover quite a small area. The map copies upon which he makes his corrections are printed on permanent enamelled squares, which fit together with machine-tested precision and are conveniently carried in a flat wooden sketching case.

Backing up the work of the survey teams outdoors are a whole series of technical and reproduction departments at the Ordnance Survey offices. These are staffed by highly skilled draughtsmen and lettering artists, trained map examiners, photographers, retouchers and the rest. One by one, each group has its own important contribution to make to the marvellous design and accuracy of the finished maps.

One busy department at Chessington is concerned with checking all the readings and measurements sent back by the field parties. A few hundred calculating machines of the latest type are used in this work. Readings are checked and re-checked, and if more than tolerable discrepancies are found they must be taken again in the field until the required accuracy is achieved. In another room are the co-ordinatograph machines, which take the results and plot out a skeleton plan on blank map squares of the area under survey.

Among the most fascinating sections at Ordnance headquarters is that which studies the results of aerial map surveying. Air photography is becoming an increasingly important factor in modern map-making, and one which has made remarkable technical advances in recent years, even since the end of the war. In many parts of the world the aeroplane has revolutionized large-scale surveying; in North America, Africa, Australia and elsewhere it has been the means of assessing the natural resources of undeveloped areas for the first time. Indeed, the possibilities of air mapping are enormous.

But in a country so well mapped as Great Britain the air camera cannot be used so extensively, though it has proved most valuable in the discovery of archæological sites. And since the war it has been used by the Ordnance Survey to speed-up preparatory work on the mapping of built-up areas. Air photograph mosaics of towns and (*Continued on page 244*)

The Tay Ferries

By M. H. Waller, B.Sc.

THE Tay Ferry between Dundee and Newport provides one of the most important services of this kind in Great Britain. Although in a way the ferry is as old as Dundee itself, very little attempt was made to organize a regular service until 1713, and the first step towards the present service was taken in 1817, when the ownership of the ferry passed to Trustees, and the first steamboat was tried in 1820.

The present owners, the Dundee Harbour Trustees, bought the ferry in 1873. Improvements to the landing stages were made immediately, new offices and waiting rooms were built, and by 1878 the service and its administration had been completely modernized.

In the process of modernization, a new steamer, the "*Dundee*," was built, and with the "*Fifeshire*," already in use, this maintained the service until 1910, by which time the rapidly increasing volume of road traffic made the building of a larger vessel imperative. The "*Dundee*" then became the third or relief boat, and was sold in 1919 to the Tay Steamboat Co. for pleasure trips on the Tay. This firm shortly afterwards sold the "*Dundee*" to the North British Railway for the Queensferry passage on the Firth of Forth, where she still plies. The veteran "*Fifeshire*" was finally sold to a firm of shipbreakers at Alloa. This vessel was built in 1858, and her 70 years of service with the Tay Ferries had given her the distinction of having the longest service of any ferry boat in Great Britain.

The new vessel added to the fleet was the "*Newport*," and a sister ship, the "*William High*," later renamed "*Sir William High*," appeared in 1924, to be followed in 1929 by the "*B. L. Nairn*." The two latter ships are still in service.

During the 1930s the amount of road traffic increased considerably. The greater length of vehicles also caused difficulty, restricting the number that could be accommodated on deck, and making very careful packing necessary. In 1939 therefore a new vessel of a revolutionary design was introduced. This was the "*Abercraig*," built by Leming and Ferguson Ltd., Paisley.

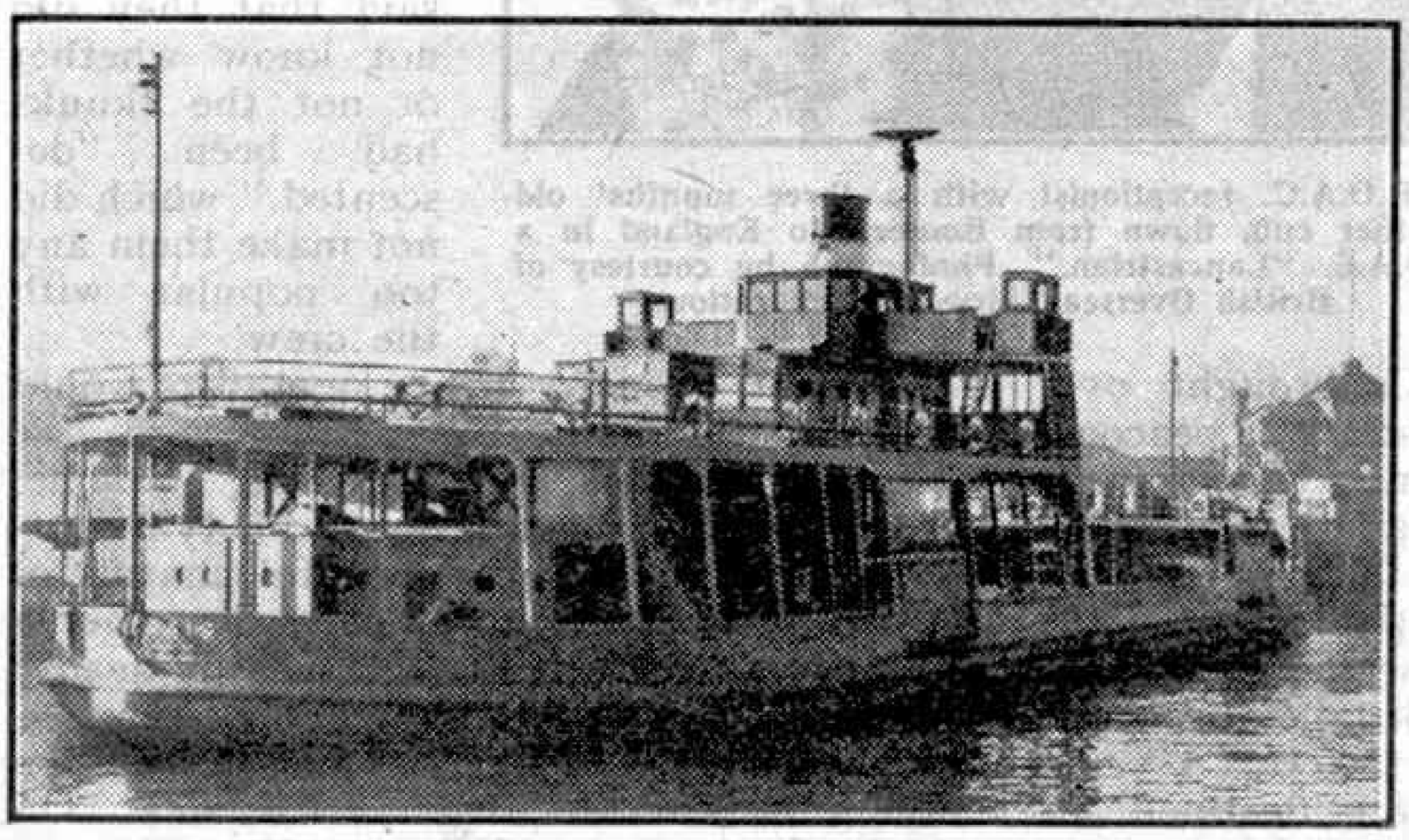
This vessel is 166 ft. long, with a breadth of 36 ft. 1 in., and on her 5,050 sq. ft. of deck space she can carry twice as many vehicles as the old vessels in the service. She is powered by two specially designed horizontally-opposed piston engines, manufactured by the Brush Electrical Engineering Co. Ltd., Loughborough. These drive two Voith-Schneider propellers, which steer as well as drive, no rudder at all being needed. This propeller consists of a horizontal disc to which six vertical blades are attached. In action the disc is rotated and the blades themselves rotate on their own axes. At one point in their movement the blades turn to give the maximum thrust against the water in the direction required, and steering is effected by altering the point at which this is done. Control is effected completely from the bridge and a vessel fitted with the drive is highly manœuvrable.

The "*Abercraig*" has been a great success. On her arrival the "*Newport*" became redundant, and was sold in 1941.

Though the Tay is not a particularly fog bound river, it was decided at the end of the war to fit the "*Abercraig*" experimentally with ocean-going radar. This had to be of a very special type. As the main trouble in the Tay to-day is the constant shifting of sandbanks, the system had to give a picture of the river and also point out the sandbanks.

The system finally installed allows the display to be rotated so that images at the top of the screen are those in the line of travel, whether going ahead or astern. The "*Abercraig*" was fitted first, by A. C. Cossor Ltd., and was in service with radar early in 1947. The result was highly successful, and all the Tay Ferry vessels are now fitted with the system, which allows them to be navigated in the densest fog.

Looking at the radar screen of the Tay Ferry vessel "Abercraig." The illustrations to this article are reproduced by courtesy of A. C. Cossor Ltd. and the Dundee Harbour Trust.



The radar scanner of the "Abercraig" is mounted on a mast on the bridge.

Noah Takes Wings

By John W. R. Taylor

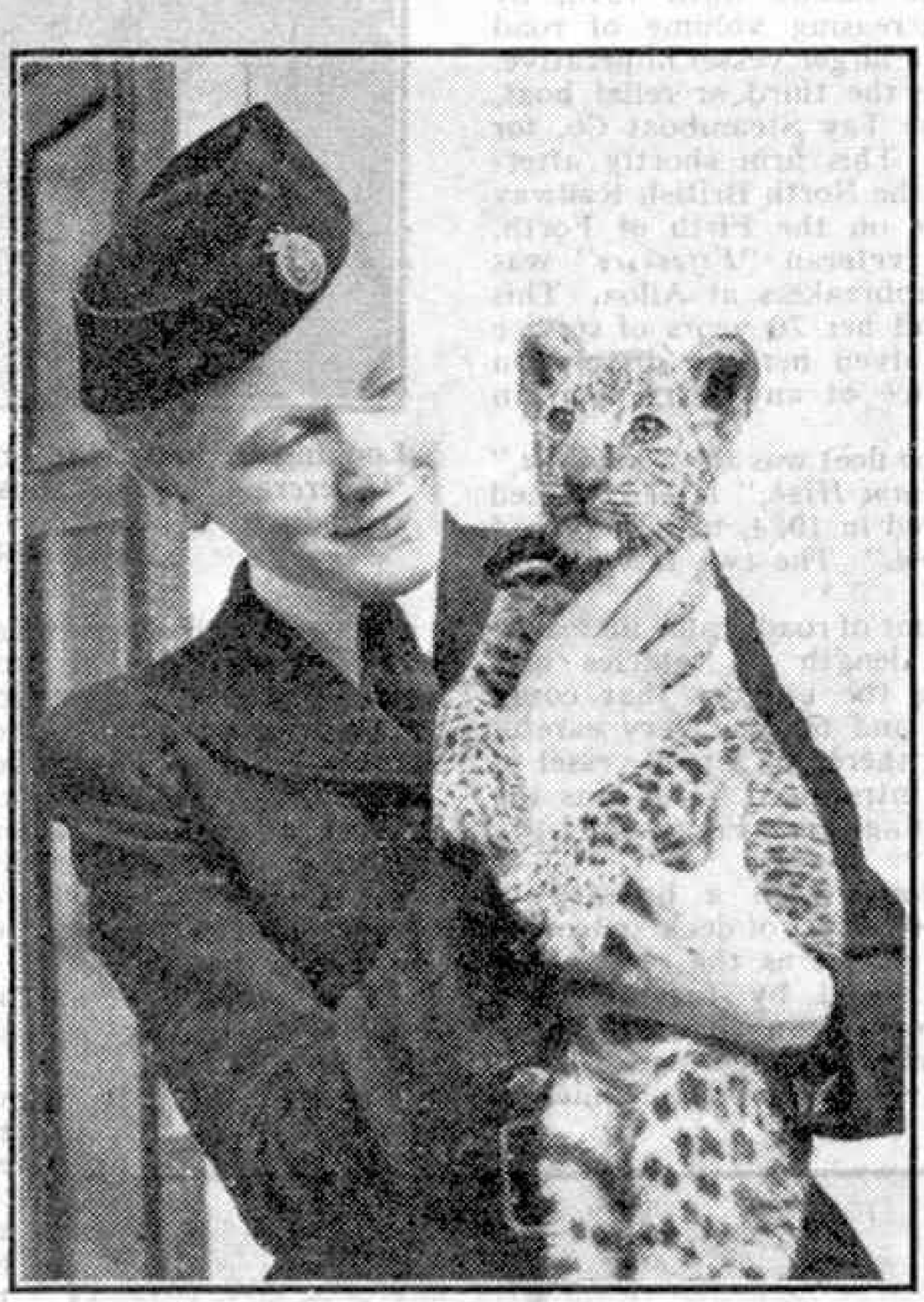
A FEW weeks ago a passenger aboard a B.O.A.C. air liner was taken ill while en route to London Airport from the Far East. As a result, on arrival he was rushed to the nearest home able to treat his particular illness, where he made such good progress that B.O.A.C. received a telephone call next day to say that their passenger was fully recovered. When they called for him, they found him sitting in an armchair with a blanket round his shoulders, enjoying a television programme.

Before you say "So what?," it may be as well to explain that the passenger was a large orang-outang ape from the jungle of Borneo. This, of course, was very special treatment for a Very Important Orang-outang, but great care is taken of every one of the many thousands of animal passengers who travel nowadays with B.O.A.C. and all the other airline operators.

Animals have, in fact, become such enthusiastic air travellers that never a week goes by without some representatives of the animal kingdom arriving in Britain by air. In the same week that the Very Important Orang-outang came to Town, B.O.A.C. brought over also a honey bear from Australia, a peacock, 300 monkeys from India and a consignment of live mink from Canada. The mink were for English fur farms, and the monkeys part of a consignment of 6,600 green Rhesus monkeys which are to be flown by B.O.A.C. to Britain this year, en route from India to the U.S.A.

Most of the animals are destined for zoos, and B.O.A.C. have carried kangaroos from Australia and bees from South Africa, bound for Moscow Zoo, while probably the most famous animal air traveller of all time was the black and white panda, Miss Lien Ho, a gift from the people of China to Britain and now a firm favourite with children at London Zoo.

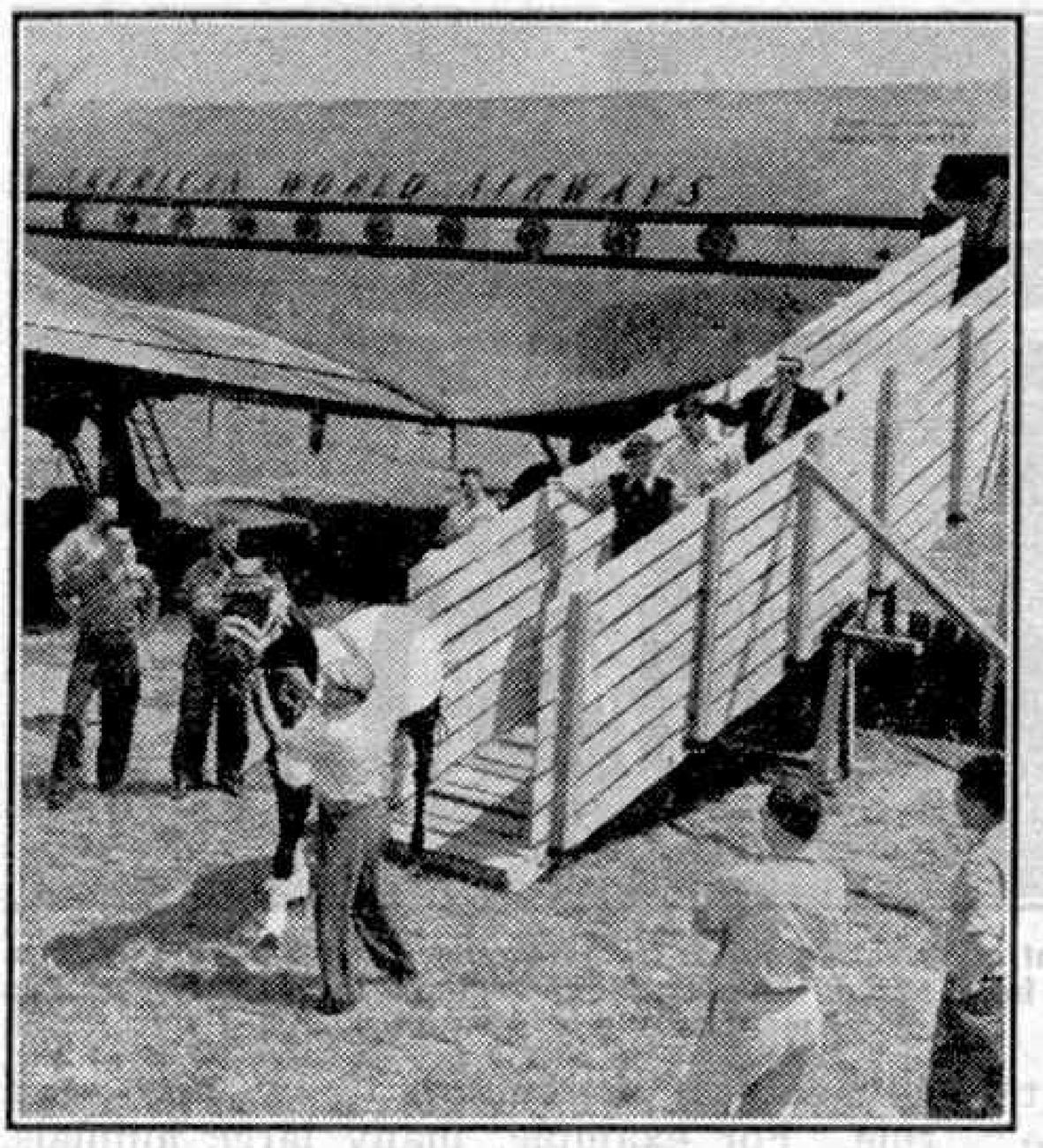
B.O.A.C. are by no means the only people who regularly fly animals in their air liners. Recently, Pan American World Airways carried across the Atlantic in a single "flying Noah's Ark," 13 crates of reptiles, birds and fur-bearing animals to help restock London's war-depleted Zoo. Included in this strange cargo were 13 horned lizards, five gila monsters, two boa constrictors, a variety of other snakes, frogs, turtles, chameleons, sparrows, bluejays, robins, 10 prairie dogs and two skunks. Zoo attendants, who accompanied the animals to La Guardia Airport, New York, for a last feeding before take-off, said that they did not know whether or not the skunks had been "descented," which did not make them any too popular with the crew!



A B.O.A.C. receptionist with a three months' old panther cub, flown from Bombay to England in a B.O.A.C. "Lancastrian." Photograph by courtesy of British Overseas Airways Corporation.

In fact, as many airline operators would be first to admit, they still regard live cargo as a rather mixed blessing. No-one, least of all the stewardesses and lady receptionists, could deny the wistful charms of a cuddly leopard cub or baby deer; but a shipment of spirited racehorses or deadly cobras is a very different proposition.

As a matter of fact, animals have been flying in aircraft longer than men. On 19th September 1783, at Versailles, a



An Argentine thoroughbred being landed at La Guardia Airport, New York, after a 6,850 miles' flight from Buenos Aires in a cargo "Clipper" of Pan American World Airways, by whose courtesy this photograph is reproduced.

sheep, a cock and a duck were carried nearly two miles in a basket suspended under a Montgolfier hot-air balloon, a month before an intrepid Frenchman named de Rozier went up in a similar balloon and so became the world's first airman.

But from a commercial standpoint the story of airborne animals started only some 20 years ago, when farmers began sending boxes of hatching eggs hundreds of miles by air. They soon realized that chicks already hatched weighed just half as much as the eggs, when crated and ready for shipment. Less poundage meant less cost to the farmers, so thousands of baby chicks began flying the airlines instead of eggs.

Breakage of eggs had sometimes been as high as 30 per cent., but casualties among chicks were negligible. What is more, baby chicks require no feeding of any kind during their first 72 hours, so airlines usually stipulate now that they must be delivered to the airport not later than 24 hours after they are hatched, guaranteeing delivery to their overseas destinations before the chicks are 72 hours old, thus saving the weight of food and water trays.

A poultry expert, an aircraft engineer and a traffic man co-operated to design the lightweight paper cartons—miniature "apartment houses"—in which chicks travel aboard P.A.A. aircraft. In this way as many as 200,000 chicks have been carried aboard a single cargo *"Clipper."*

Of course all this does not mean that you will share your seat with a box of chirping chicks or a cow next time you fly, for in most cases animals enjoy their own specially-designed accommodations when they take to the air. Chicks are in fact about the only livestock ever carried in passenger aircraft, and they travel in the cargo compartment. Another exception is a "seeing-eye" dog, which is allowed to accompany its blind owner.

Dogs are perhaps the next most frequent animal passengers to chicks, and unfortunately they present many more problems. Most aircrew members assigned to the handling of dogs and other larger livestock undergo special training under a "vet," when they learn, for example, that dogs and horses are apt to be nervous during take-off and landing, since changes of altitude affect them just as they affect humans.

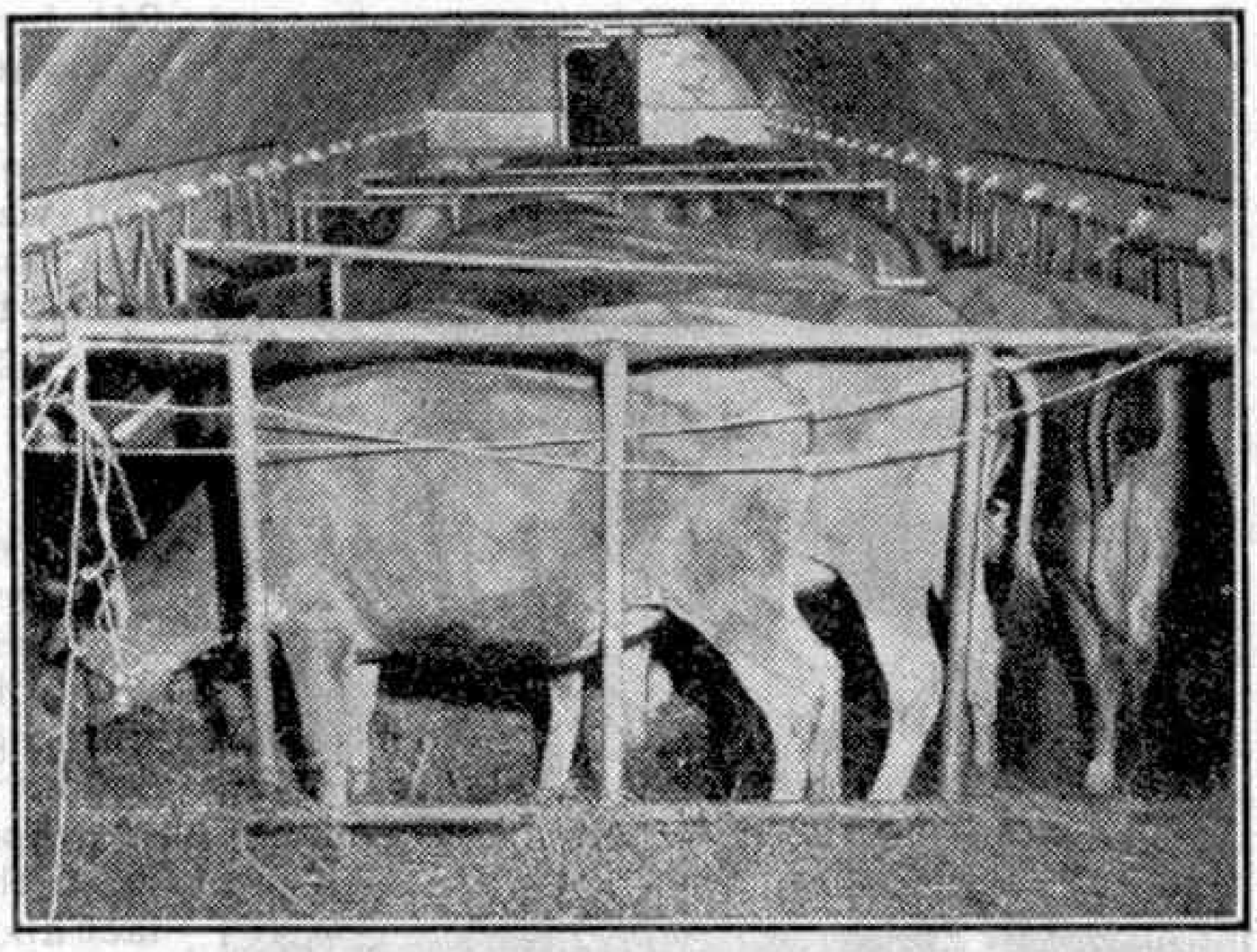
Highly-strung racehorses and many kinds of dogs are inclined to remain nervous while in flight and are generally

Receptionists holding two of five whippets which were flown from Southampton to Karachi in a B.O.A.C. flying boat. Photograph by courtesy of British Overseas Airways Corporation.

not fed aloft; but small dogs seem to take flying very calmly and enjoy reguiar meals of dog biscuits and milk. Incidentally, air-sickness among dogs is virtually unknown. They normally travel in crates big enough for them to stand up and turn round in, and must be provided with a collar, leash and muzzle, so that they can be exercised at intervals if on a long journey.

One member of the cargo staff at La Guardia now looks twice before he exercises a dog. Apparently one day he chose to take for an airing a husky animal of the sheep-dog variety, sent home by an American soldier serving in Europe. En route the animal was offered a drink of water, which it proceeded to swallow in great thirsty sips. Another cargo man, who had been raised on a farm, happened to remark that it was the first dog he had ever seen inhaling water; in fact, he had always been told that dogs and other animals lap water with their tongues, and that wolves are the only sippers in the animal kingdom. Back into his crate went Brother Wolf in double quick time—and the cargo staff do not know yet what the soldier *thought* he was sending home to amuse his kiddies!

The bigger the animal, the greater the



A shipment of 32 calves, flown from Toronto, Canada, to Montevideo, Uruguay, in a cargo "Clipper." Photograph by courtesy of Pan American World Airways.

advantages of sending it by air, as a rule. For example, many large animals, especially horses and mules, are very prone to sea-sickness, which is sometimes fatal and always involves weeks of convalescence after landing. On the other hand, apart from a certain nervousness, they do not seem to be adversely affected by air travel. In fact racehorses have been flown to Britain from France, and even across the Atlantic, and have been ready to compete a few hours after arrival.

Normally such large animals travel in stalls provided by their owners, and they must be accompanied by an attendant familiar with their handling and able to inject calming hypodermics in an emergency. The attendant must also make sure that the animal does not drink too much water at a transit stop, as cases have been known where a horse has drunk so much water that his increased weight has overloaded the aircraft.

Loading is often a problem, and animals sometimes have to be put aboard aircraft such as a "Skymaster" with the aid of an elevator truck, which tends to increase their nervousness. That is where aircraft like the Bristol "Freighter" and Miles "Aerovan," with nose or tail-loading doors and a low floor, score every time. But one would-be air traveller in Ceylon recently proved too much even for the capacious

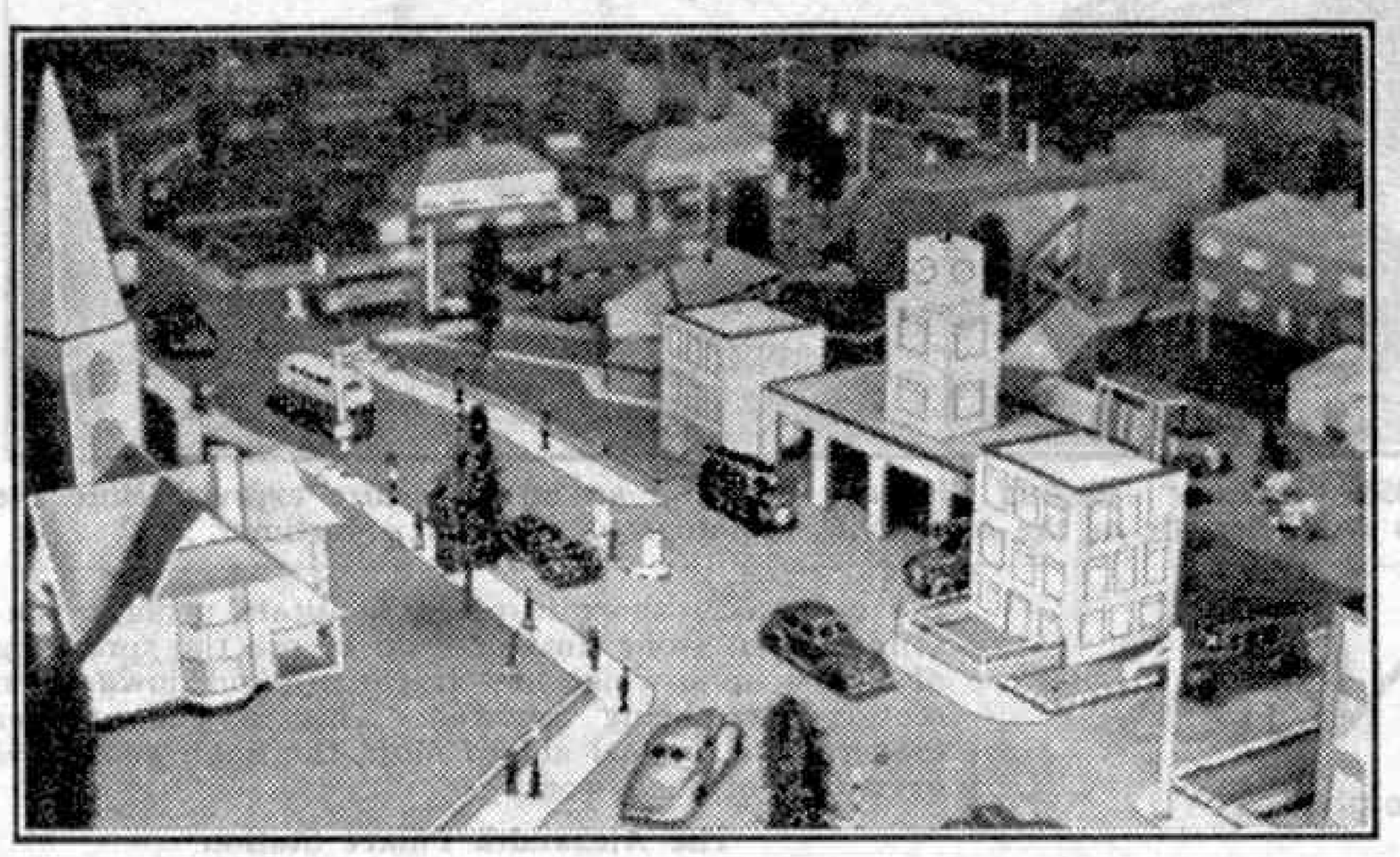
(Continued on page 244)

A baby chimpanzee on arrival by air from West Africa. Photograph by courtesy of British Overseas Airways Corporation.

A Road and Rail Layout

Dinky Toys Town with Hornby-Dublo Railway

THE practice of building up road layouts on which Dinky Toys can be operated is growing, and many splendidly realistic schemes have been planned by readers of the "*M.M.*" One of the most interesting of these has been constructed by J. M. Young, Putney. Its outstanding feature is that it is at once a Hornby Dublo Railway and a Dinky Toys town with an extensive road system. In addition there are a country section and a small dock system, so that the model gives ample opportunities for interesting play of a very varied character.



J. M. Young, Putney, operates a large combined Hornby-Dublo and Dinky Toys layout. This picture shows part of the town section of his layout, which includes also a country area and a dock scene.

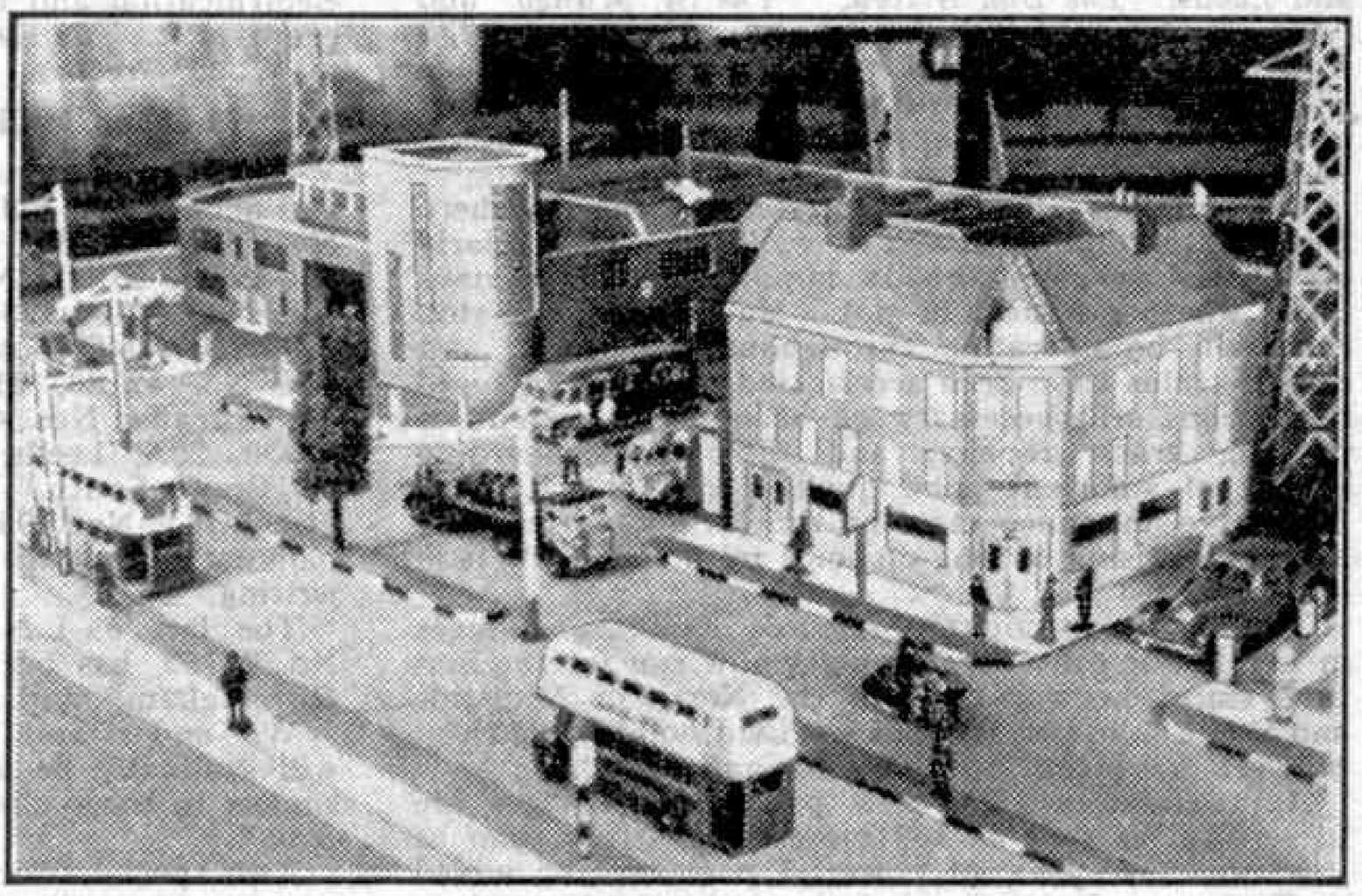
Some idea of the nature of Young's layout is given by the two photographs reproduced on this page. It is built up on a base of plaster board, supported at a height of almost 3 ft. on a strong wooden frame. The board measures 15 ft. in length and 9 ft. in width, and so is roomy enough for the many details required in a combined model of this kind.

Of the three sections of the layout the town area is the largest, and it is well provided with a well arranged series of buildings of the kind that one can usually see in any town. Houses figure largely. These are chiefly semi-detached houses of the standard type, but there are also "pre-fabs" to give a topical touch. There is a church, with which a vicarage is associated, and the public buildings include a post office and bus, police and fire stations, with a picture house. Representations of a bowling green and tennis courts, complete with pavilion, add a very pleasant touch to the layout, and a windmill is a further attraction. The docks are on the bank of a river that flows across one corner of the layout, and there a large warehouse has been erected.

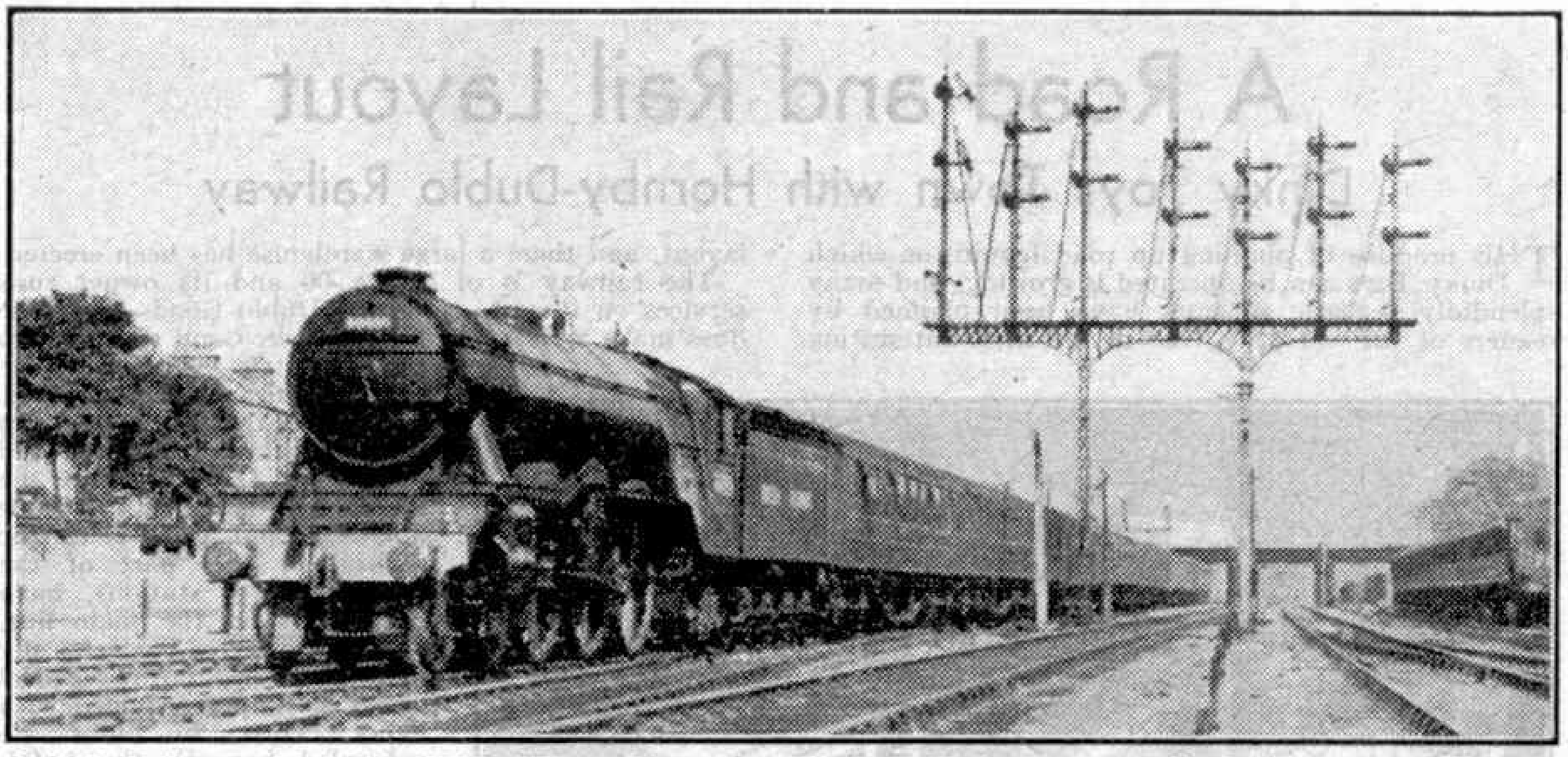
The railway is of Gauge 00 and its owner runs services on it with a Hornby-Dublo Goods Set. The lines make a circuit of the town area and run through the country section, while there is a branch to the docks. Altogether there are 65 ft. of track, and the distance travelled in making the circuit of the town itself is 33 ft. Suitable buildings add greatly to the realism of this part of the layout. Two stations have been built on the main line, and each of these is electrically lighted. The entire model indeed is amply provided with lights. Over 20 bulbs are concealed beneath the buildings, and the model is a great sight when it is lit up, while night operations on the railway and with Dinky Toys in the town area are great fun.

The many buildings, most of which of course are in the town area, were constructed by Young himself of balsa wood, and when completed were covered with brick paper and provided with other accessories in order to achieve realistic detail. On the roads there are the usual traffic signs, and the inhabitants of this interesting town, who number 275, can readily find telephone kiosks when they wish to make calls. Police boxes also are provided, and there are 80 vehicles, including motor cars, lorries, etc., running on the streets.

An extensive layout of this kind, suitable for both rail and road operations, naturally takes some time to complete, and readers will not be surprised to learn that Young has spent the spare time of two years in the construction of his model. The task of building it has given him the greatest pleasure.



Another view of J. M. Young's layout. Most of the buildings were constructed of balsa wood.



British Railways 4-6-2 No. 60059 "Tracery" passing Finsbury Park on an up Yorkshire express. Note the "somersault" signals characteristic of the old G.N.R. Photograph by G. R. Mortimer.

Railway Notes

By R. A. H. Weight

National News

British summer timetables began to operate this year on 23rd May, earlier than in 1948, and will continue until 25th September with increased services during the holiday peak period, when over four million passenger train miles will be run weekly. There will be considerably more trains, especially on Saturdays; on more than 500 of them every weekday restaurant cars will be provided, and seats may be reserved in advance.

New or revived named trains include: "*The Pines Express*," between Manchester and Bournemouth; "*The Devonian*"—Bradford, Torquay and Kingswear; "*The Capitals Limited*"—a fast portion of the "*Flying Scotsman*" King's Cross—Edinburgh service; "*The White Rose*" and "*The West Riding*"—King's Cross and Leeds; "*The Bon Accord*," "*The St. Mungo*" and "*The Granite City*"—all Glasgow—Aberdeen; "*The Fife Coast Express*" and "*The Irishman*"—between Glasgow and St. Andrews, and Glasgow and Stranraer respectively; and "*The Fenman*"—Liverpool Street and Hunstanton.

The summer Pullman expresses on the Southern Region are running again, as well as those regularly established services already familiar on the various lines, whether named or not. Many long non-stop runs will be operating throughout the season and certain trains have been accelerated. In view of speed restrictions still necessary on account of current or pending track repairs, and difficulties regarding supply of sufficient good quality coal, the Railway Executive announce that the time is not yet ripe for a general raising of long-distance train speeds to 1939 levels.

Through cross-country services avoiding changes in London or other large centres now run for the first time since the war between the North or Midlands and South Coast or West of England holiday districts; between York and South Wales and elsewhere.

Approximately 1,350 new passenger carriages are in service, as well as 167 more locomotives than at this time last year, of powerful passenger or mixed traffic types. It is intended to repaint 1,166 stations during 1949.

An order has been placed with a British firm for six petrol-driven "frog-rammers." These move over the ground in short leaps to facilitate prompt consolidation of stone dust or sand before the spreading of ballast upon which new tracks are laid down when sections are being renewed. This is yet another modern, mechanical aid to more thorough and rapid execution of such work.

The Alexandra Palace Station

We are able to reproduce an interesting photograph this month depicting the west end of the Alexandra Palace (whence television programmes are transmitted, though from the east end). The Palace is a prominent landmark on the hills of north London. The photograph shows a suburban train in the branch terminus station ready to depart behind a former G.N.R. "N1" 0-6-2T, running bunker first. This engine, now numbered 69467, was one of the two of the type taken over for hauling armoured trains on Scottish coast lines during the 1914-18 war. It was off the G.N.R. strength for some years and returned to the L.N.E.R. in 1923. Lately trains between Finsbury Park and Alexandra Palace have been worked by G.C. 2-4-2 or G.N. 4-4-2 tanks, on the pull-and-push basis. The branch is scheduled for electrification and then London Transport trains will run over it. The East Coast main line is not far away, at Wood Green.

London Midland, and Scottish, Regions

New engines recently placed in traffic were numbered and allocated as follows: Class "5" 4-6-0 mixed traffic: Nos. 44718-9, 8A, Edge Hill, Liverpool; No. 44720, 5A, Crewe North; Nos. 44735-6, 26A, Newton Heath; and No. 44737, 23C, Southport. Class "4" 2-6-4T; No. 42107, 24C, Lostock Hall; No. 42108, 23D, Wigan; and No. 42186, 21B, Bournville. Class "4" 2-6-0 mixed traffic: Nos. 43028-9, 5B, Crewe South; and No. 43030, 20A, Leeds; diesel electric 0-6-0 No. 12051, 5B, Crewe South. The former L.N.E.R. 2-8-0:0-8-2 "Garratt," No. 69999, is on loan to Bromsgrove for banking duties up the Lickey incline at the time of writing.

The last ex-L.N.W.R. "Prince of Wales" 4-6-0, No. 25752, has been noted working from Stafford to Birmingham, and also to Manchester.

We understand that all converted "6P" 4-6-0s will gradually be fitted with smoke deflector plates, similar to those already on No. 46115, "*Scots Guardsman*."

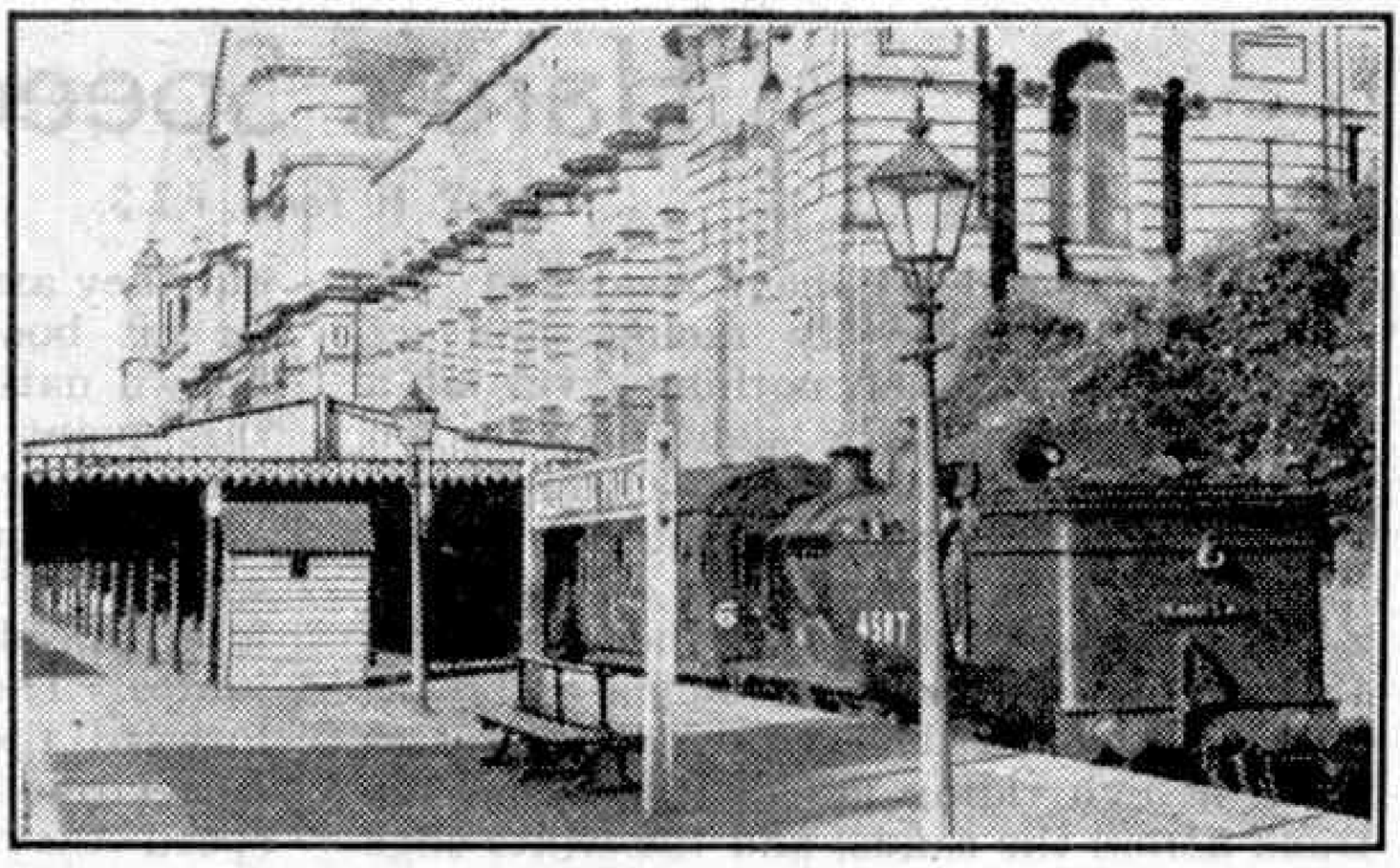
Two special trains, largely composed of restaurant cars, were run direct from Euston to Castle Bromwich station, Birmingham, while the British Industries Fair was in progress.

Britain's first all-steel, welded corridor passenger

coaches are now in production on a considerable scale at Derby Works. In appearance and internal finish they are almost exactly the same as those lately built with timber body framing, metal panels and steel frames.

"Royal Scot" as well as rebuilt "Patriot" 4-6-0s have been reported working over the Central Division between Leeds and Liverpool. W.D. "8F" locomotives are now more prominent in the East Lancashire—West Riding area, as the long-lived ex-L. and Y. 2-4-2T engines still are.

In Scotland L.N.E.R. "J38" 0-6-0s have been running trials over the Highland system. We have received favourable comment upon the high standard of cleanliness maintained on many engines in the Scottish Region, including express types shedded at Haymarket and Eastfield and renumbered green "B12" 4-6-0s on the Great North of Scotland section, in addition to various former L.M.S. engines.



A King's Cross suburban train at Alexandra Palace. The engine is one of the familiar condensing "N1" 0-6-2 tanks. Photograph by H. C. Casserley.

One of the latest new "B1" 4-6-0s built at Gorton, No. 61344, hauled the southbound "*Queen of Scots*" from Glasgow to Edinburgh on 15th April last; "A3" No. 60041, "*Salmon Trout*" took over at Edinburgh, Waverley.

News from the Western Region

Continuing construction of modified "Halls" at Swindon, Nos. 7901-2 have been placed in service, named respectively "*Dodington Hall*" and "*Eaton Mascot Hall.*" New 0-6-0Ts Nos. 9674-7 also have been completed for service in South Wales.

A new type of heavy duty 0-6-0T shunting engine to be known as the 15xx class is in hand, having outside cylinders and Walschaerts valve gear. The 16xx class will be a lighter inside-cylinder 0-6-0T design, to replace withdrawn members of the "850" and "2021" classes. Designs have also been completed for four tenders equipped with a coal weighing apparatus in order that fuel consumption tests may be conducted in ordinary service. It is understood that 10 more "Castles" will be built. Construction and improvement of rolling stock are also proceeding.

American Locomotive Developments

Locomotives in the United States are for the most part conceived on a gigantic scale. They can be much heavier and longer than is customary here, as clearance gauges are on a more generous basis. Loads are often enormous, necessitating types and wheel arrangements unknown in Britain.

Some huge turbine-driven locomotives in various forms are being tried by the Pennsylvania and Chesapeake and Ohio Railroads. General service express engines frequently possess eight-coupled driving wheels. One example is the 4-8-4 "Niagara" type on the New York Central, which is provided with a 14-wheeled tender! Coal and water consumptions are very high, so carrying capacities must be correspondingly vast to deal with fast trains weighing perhaps over 1,000 tons.

Two very large outside cylinders are normally favoured, with Baker or Walschaerts valve gear. Boiler working pressures are often as high as 275 lb. per sq. in. and are tending to rise to as much as 310, which must be a considerable tax on materials and maintenance. Articulated heavy service freight engines are seen, such as the 2-8-8-2, having two sets of outside cylinders. More unconventional still are the 2-6-6-6 "Mallet" coal engines of the C. and O. among other giants, which have tackled 160 loaded cars of coal. They have a wheelbase, including 14-wheeled tender, of 113 ft.

Diesel-electric as well as electric traction is being developed further, but the American steam locomotive is thought still to present considerable spheres of usefulness. Roller bearings, together with other valve gears on trial, thermic syphons, mechanical stokers, and ingenious mechanical features, are playing their part to that end.

Ready to go! A converted "Royal Scot," L.M.S. No. 6147 "The Northamptonshire Regiment," at Lime Street, Liverpool, on a London train. Photograph by R. Whitfield.

Southern Tidings

The lined black finish is now much in evidence on many types of tender and tank engines. Many enthusiasts deplore the fact that "Schools" are now painted in this manner, and would like to see them ranking with "King Arthurs" as selected passenger engines, in green.

The last "F1" Stirling 4-4-0, No. 1231, although withdrawn, was still intact at Ashford at the time of writing. More "D3" 0-4-4-Ts are being broken up, and the dumps at Eastleigh are also being cleared.

Hare's Speed

By R. H. Ferry, F.Z.S.

WITH crowds I have watched the Derby, speedway racing, and ice hockey; but for speed nothing gives me a greater thrill than the sight of a brown hare legging it over a dew-drenched meadow in the early morning, with the rosy round face of the Sun peering over a hedge like a country yokel as the only other spectator. I like too to watch hares racing at break-neck speed from the whippy dune grasses when a high riding moon flood-lights the track across the sands, and the white edge of the ebbing tide is the finishing tape.

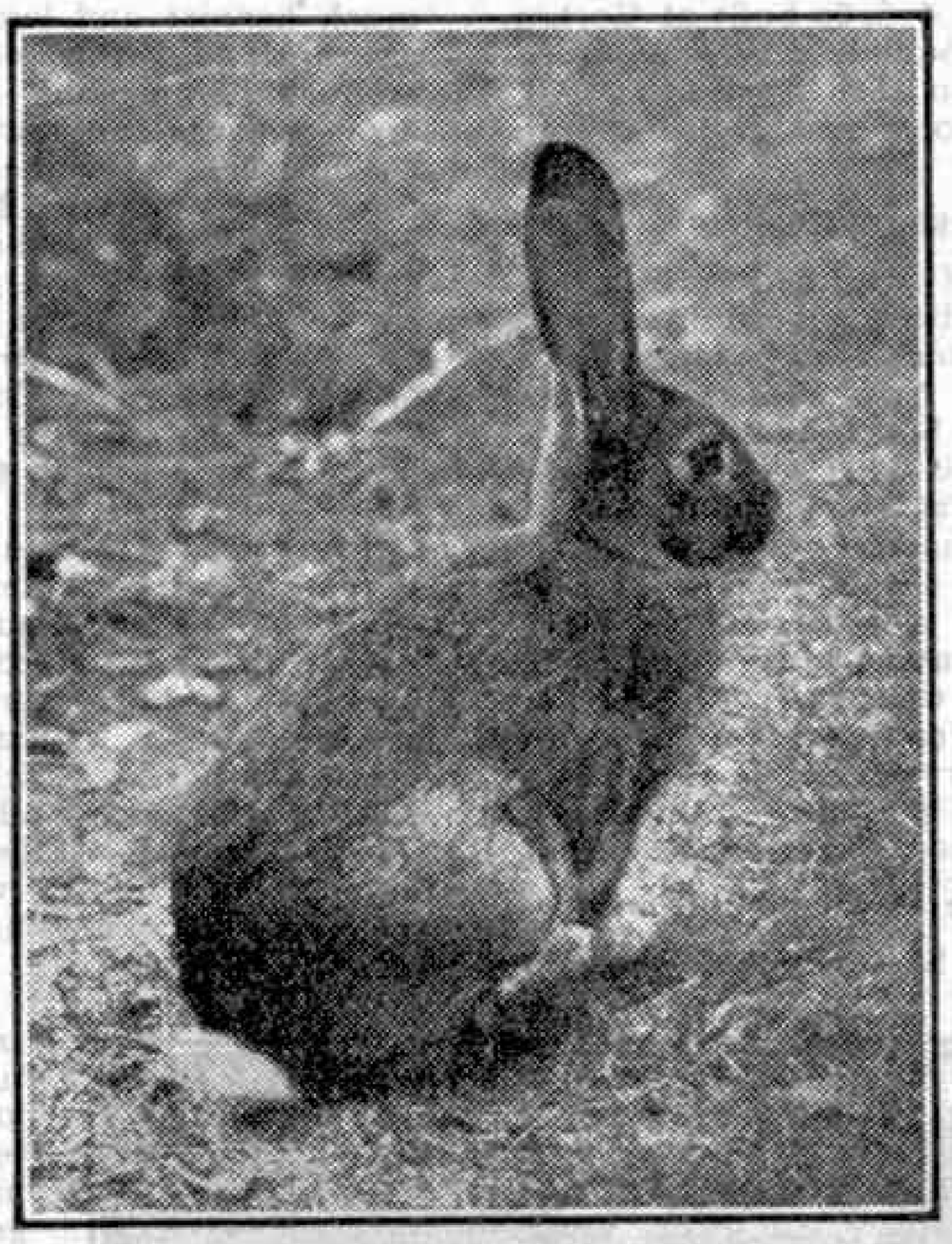
There is something stirring about the speed of these creatures which is hard to set down on paper, and men have always been fascinated by it. About 350 years before Christ the Greek Xenophon wrote that the mountain hares in his country were more swift than those bred on the plains and that March hares were the slowest of any; it is true even now that March hares go hay-wire in the Spring, and think more of fighting and courting than racing.

Boadicea, the famous British Queen, realized that the sight of a hare going all out would have a good psychological effect on her slow-footed soldiers when she held one concealed in her bosom and released it immediately before her last battle with the Romans. The Britons followed swiftly and light-footed on the firm track picked by the hare and won an easy victory.

It was Mark Twain who said of the Jack Rabbit, the hare's American cousin, "Long after he is out of sight you can hear him whiz." But our brown hare is by far the fastest small animal in the world. And of the bigger animals only cheetahs and black buck can beat it.

The true fact of the matter is that hares cannot walk or saunter along; their slowest speed is fast, and when going all out they are able to accelerate to 45 m.p.h. In his book *'It's My Delight'* the well-known naturalist Vesey FitzGerald makes this point quite clear when he writes "At all speeds, even the slowest, the method of progression is a series of jumps with the hind legs and skips with the fore. Speed is attained by lengthening the jumps. The quicker the pace the farther forward the foot prints of the hind legs in relation to those of the fore. At full speed they are well in front of them." This gait is very similar to the leg action of greyhounds.

There is a fine line between genius and madness in the hare's mental make-up, but physically everything goes to make "Puss" a top line athlete. It prefers to sit tight in a form and only sprints under compulsion; its heart is so adjusted that the animal is able to get into top speed in the fraction of a second. And the strong hind legs, nearly twice as long as the fore, enable it to run fastest up hill and make sideway jinks to avoid pursuing hounds.

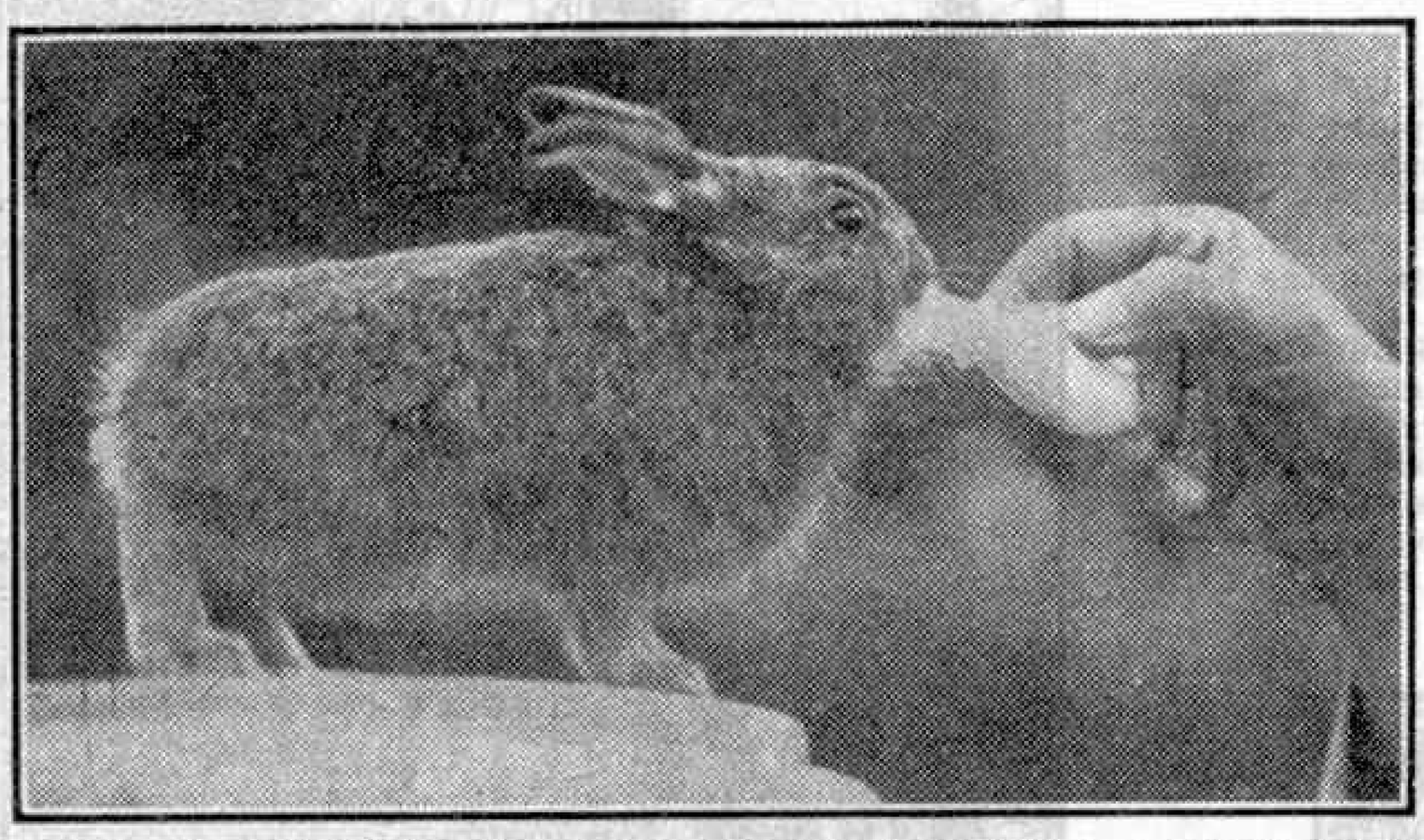


The hare, listening but always ready to speed away in a flash. Photograph by Oliver G. Pike.

Very few animals can change gear like hares to suit the ground over which they are travelling, ploughed furrows or springy turf. Frank Lane records the case of a hare changing completely from forward into reverse gear! A hare was pacing a man driving along a road at 30 m.p.h., but slowly it began to lose ground. "Suddenly, without any apparent slacking of pace, the hare turned a somersault and legged it up the road in the opposite direction."

In lieu of spikes in shoes the hare has hairy padded feet, which prevent it slipping on short dry grass and act as snow shoes in severe winter weather. They also prevent sinking in marshy ground. When it is hurtling its 7 lb. weight along,

one might well expect the danger of speed wobble, as there is no tail to speak of to act as a rudder. Believe it or not, the hare steers with its ears. When hounds are close upon it, the hare lowers one of its black tipped ears, on the side from



Feeding the baby. The photographs reproduced on this page are by W. S. Berridge, F.Z.S.

which danger is apprehended, and in this way the body banks over, making the dog lose distance by several yards. A greyhound's speed is only 40 m.p.h., so matched singly against a hare a dog has small chance of killing.

Except in the Spring hares are not so mad as they are made out to be. Like all good cross-country runners, they know how to conserve their strength, and once in a good lead they do not waste energy unnecessarily. In fact, their running technique is a masterpiece of judgment. A mother hare with young leverets rarely makes off, but dodges about or runs on a familiar circular track. Only the bold old bucks go away like a fox in a straight line of country. When a hare is going all out its body is stretched low to the ground, and the scent is strong and less likely to be blown away. If hard pressed, hares often slow up deliberately in a suicidal fashion, but this allows them to run higher on the legs and the scent automatically becomes patchy. The hare then sprints on, leaving the hounds baffled and blown. Setting its own pace in this way an Essex hare once led hounds "up the garden path," covering 18 miles in three quarters of an hour.

There is an old country belief that hares speed so fast that they run themselves blind, but the real explanation of this superstition is that the big bulbous eyes of the hare are so placed in the head that it can see far better to either side than to front or rear. And the only fault in technique of this champion is the occasional habit of turning to look back. This results in fatal crashes into wire and posts.

With great speed and powerful legs, hares are expert long and high jumpers. Long jumps of 20 ft. are common and one jump of 26 ft. has been officially recognized. As a rule a hare prefers to make an exit from a field under a gate, but if the bottom bar is painted white the beast will hop over the top, taking it in its stride, like a horse over a hurdle. A hare put up by some steeplechasers on the Aintree course was once seen to run ahead and show the way over a National jump, not a bad performance on a small daily ration of grass and tree bark!

There is a rule in Nature's animal Olympiad that the more timid and defenceless an animal the faster it must be able to run. In this respect the hare with all its queer ways runs true to form, but perhaps the strangest thing of all about it is that no effort makes it puff or blow.

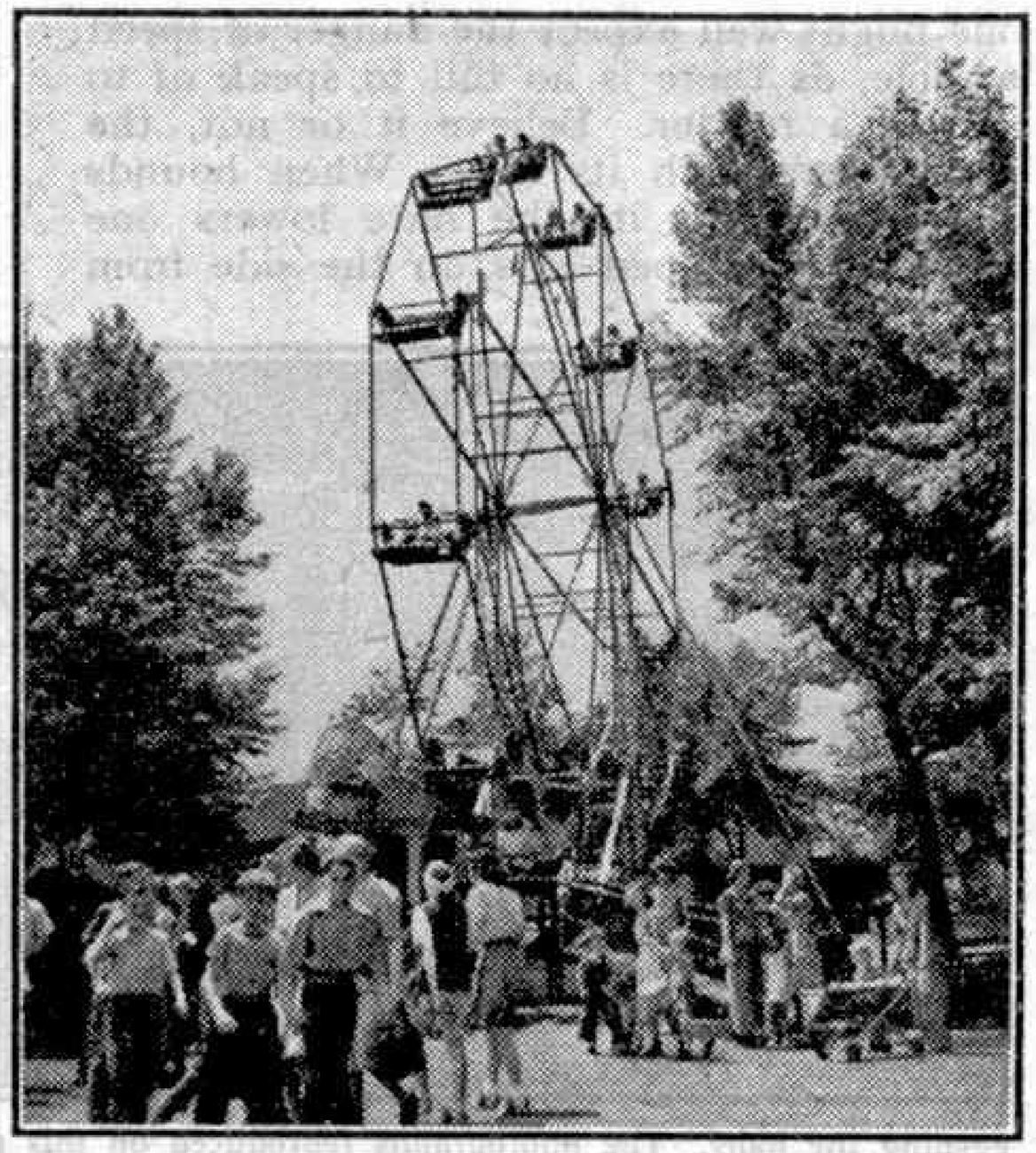
Those long ears have other uses besides listening. A running hare uses them to help him to bank over to one side.

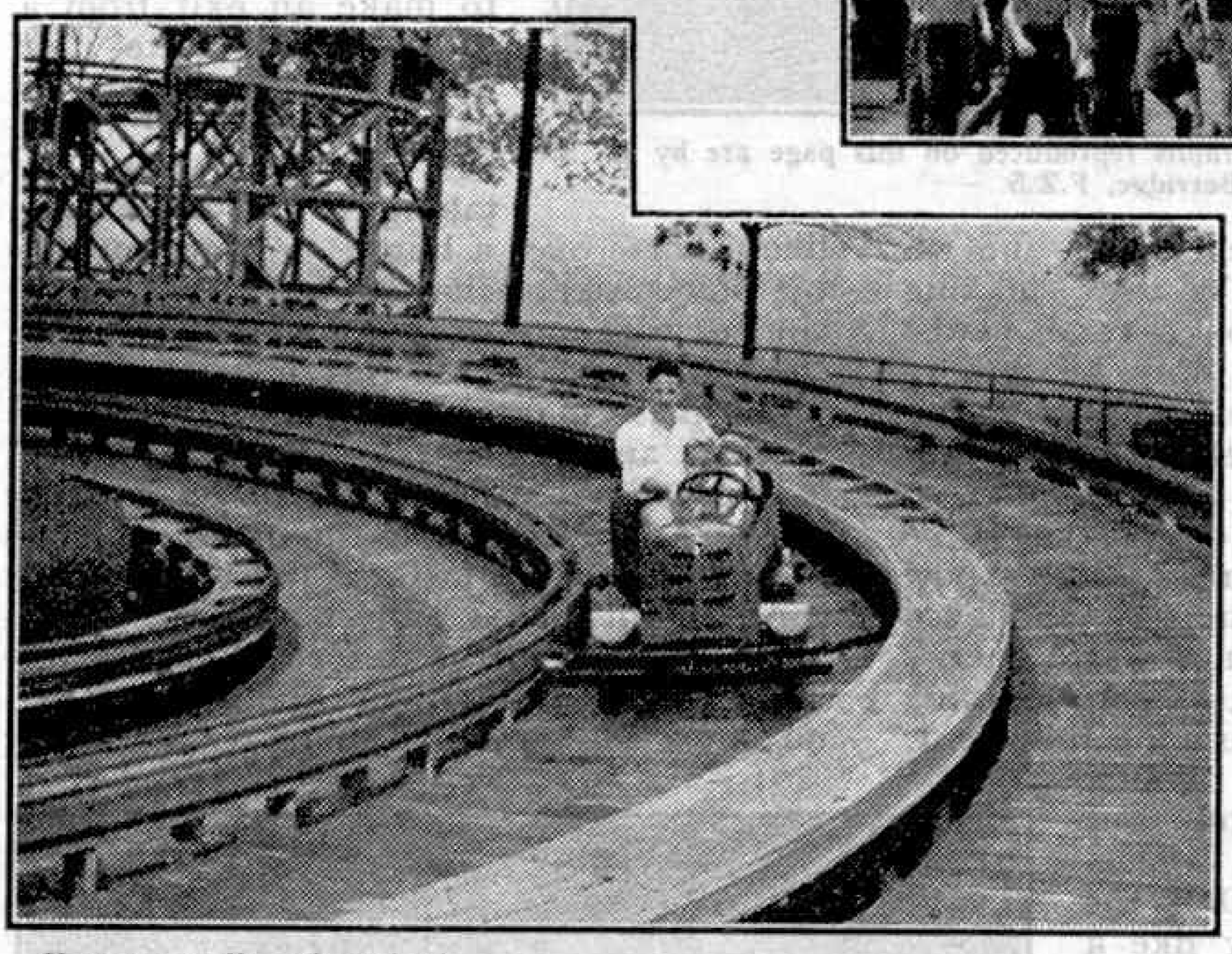
Electric Motors for Fun

By M. Lorant

AT Kennywood Park, Pittsburgh, U.S.A., one of the world's largest amusement parks, some 125 motors are needed to make the rides go round or up and down. They range from the large 150 h.p. unit that powers the Racer roller coaster to the ½ h.p. midgets that operate gadgets in the park's "fun" centres.

Practically everything in the park but the ponies runs by motors, and most of the motors bear the trade mark of the nearby Westinghouse plant. In addition to the motors, transformers and related apparatus, the park puts thousands of lamp bulbs into service. On the giant merry-go-round, claimed to be the largest in the world, there are 1,800 lamps, most of them 10 and 25 watts.





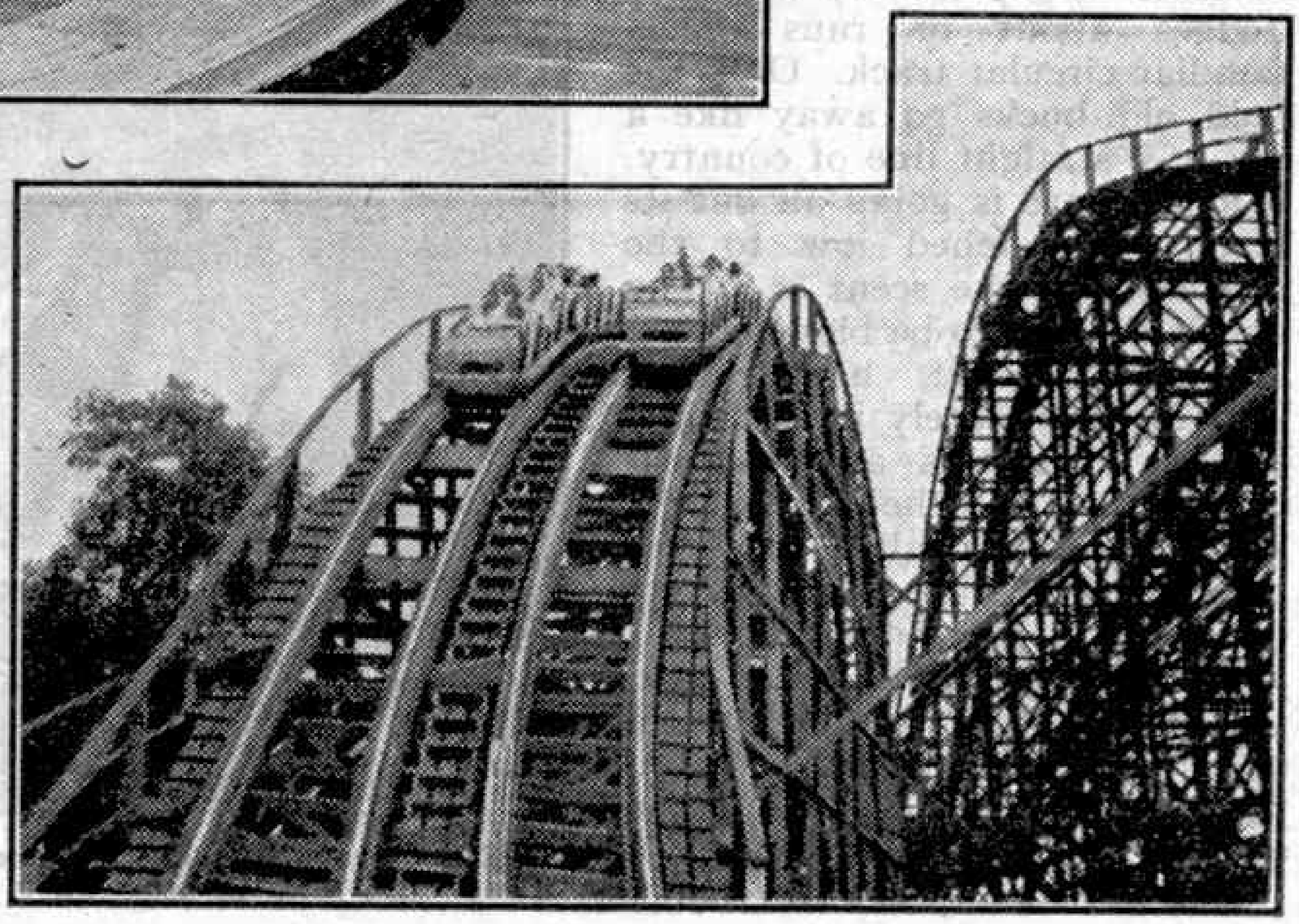
Without its electric motors, transformers, fuses and all that goes with them, an amusement park would be as useless as a lorry without wheels.

Passengers get to the top of the Ferris Wheel at Kennywood Park, Pittsburgh, shown above, because there is a 10 h.p. motor to turn it.

The Roaring Racer seen below would not provide a single thrill without its 150 h.p. motor, the largest at Kennywood Park, and each of the cars that give a more sedate ride on the track on the left is driven by a 1½ h.p. motor.

Kennywood's electrical rating is 1,800 kVA. One-third of this is used for power, and the other two-thirds for lighting and for appliances in the park restaurant. The keystones of the system are six tiny substations, which the park call transformer vaults. These are arranged so that power flows in two interconnecting rings, and in case of a line failure, the load can be shifted from one ring to the other without interrupting a single amusement.

Unless you are looking for it, you could walk through the Park for years without seeing any evidence of the electrical system. The substations are tucked away in concealed spots, and virtually all the wiring is underground.



BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With certain exceptions, which will be indicated, these should be ordered through a bookseller.

"THE HEAVENS DECLARE"

By I. O. Evans (Warne. 6/-)

One of the greatest heroes of science was Galileo, who lived in the Italian city of Pisa just over 300 years ago. His story is full of interest, from the time when as a young man of 18 he watched a swinging lamp in Pisa Cathedral, through his conflict with the church and down to his last days, when he was still full of ideas on science and mechanics.

There were many dramatic moments in Galileo's life. One came when he showed that cannon balls dropped together from the top gallery of the Leaning Tower of Pisa reached the ground at the same time, whatever their weight, thus disproving a belief that had been held for centuries that the heavier an object the more quickly it fell. Mr. Evans has had the excellent idea of telling us about this and other dramatic discoveries of Galileo in a story, in which some of the students, workmen and other characters are imaginary, while the deeds of Galileo and his words and thoughts are real. The result is excellent and readers will enjoy such stories as the discovery of the mountains of the Moon, the satellites of Jupiter and the rings of Saturn, and will sympathize with Galileo in the conflict with the Inquisition to which these and other scientific achievements led.

There is a coloured frontispiece, and many drawings in the text illustrate events in the life of this great pioneer.

"THE PICKWICK PAPERS"

By Charles Dickens (Harrap. 6/- net)

The publishers have had the happy idea of issuing reprints of important works of both fiction and non-fiction in a new series, known as "The Holborn Library." The series is to include books by Thackeray, Scott, Stevenson and other famous authors, and here is one of the novels of Charles Dickens that also will appear in it. Most readers of the "*M.M.*" already know Mr. Pickwick, Sam Weller and the host of wonderful characters who crowd the pages of this book, and younger readers who wish to explore this wonderland as well as the older ones who now return to it will find the new edition admirable. The text is complete and authentic; the paper, although thin in order to provide a book of reasonable size, is of good quality; and the type is easily read.

"KING ARTHURS AND LORD NELSONS OF THE S.R."

By S. C. Townroe, A.M.I.Mech.E.
(Ian Allan Ltd. 2/9 post free)

Readers who obtained copies of Mr. Townroe's "*Book of the Schools Class*," reviewed in the "*M.M.*" in January 1948, will not be disappointed in the present volume by the same author. "King Arthurs," numbering 74 all told, have been familiar on all Southern main lines for nearly 25 years and the class, with its minor variations, spread over four groups of engines, is a typical example of the growth of a design over a period of years. The "Nelsons," a smaller, but select band of 16 engines of greater power, have been more restricted in their travels, but they have, and still do, put in very big mileages on the heaviest trains.

The author with his specially intimate knowledge of Southern locomotive matters gives a fair and careful account of the career of each class. Special attention is given to the names of engines of the two classes and to performance on the road. For each there is a line drawing and a footplate chart with numbers indicating the various fittings, and other illustrations comprise reproductions of individual engines and of trains hauled by them.

"L.S.W.R. LOCOMOTIVES"

By F. Burtt, M.I.Loco.E.
(Ian Allan Ltd. 6/9 post free)

This is a comprehensive survey of the locomotives of the former London and South Western Railway from 1873 to the end of 1922, on similar lines to those followed in the "*Brighton*" and "*South Eastern*" books by the same author. In it the products of such well-known locomotive men as Beattie, Adams, Drummond and Urie are described and illustrated.

L.S.W.R. locomotive design seemed to pass through alternating periods of complication and simplicity. Engines of the earlier Beattie period were fitted with numerous special devices; the Adams engines were plain and straightforward; the Drummond period which followed brought with it complexities of four-cylinder propulsion, fire-box water tubes, steam dryers, tender feed heaters and numerous other appliances; and finally there came the rugged simplicity of the Urie engines, many features of which have been continued in standard Southern design. The different locomotives of these periods are dealt with class by class, with numbers, building dates and notes on individual engines, the 1914 war adventures of some of the Adams 0-6-0s and other matters, and notes are included on the careers of "Chiefs" who ruled at Nine Elms and later at Eastleigh. The many illustrations show a representative selection of the locomotives dealt with.

"HOW TO BUILD AND MANAGE A CANOE"

By A. R. Ellis and C. G. Beams
(Brown, Son and Ferguson)

In the foreword to this book Mr. Ellis expresses the belief that the real way to happiness for a boy is to engage in an occupation that demands the skilled use of his hands and appeals to his spirit of adventure and love of the open air. Canoeing is one way of attaining this end, and Mr. Ellis is a splendid guide for those who adopt it. With Mr. Beams he gives the fullest instructions for the building of a 16 ft. rigid canvas-covered canoe, with drawings and photographs to help the constructor. The practical experience of the authors is drawn upon for details of canoe management in various circumstances, and there are sections dealing with every other phase of canoeing, including camping, cooking and a survey of waters on which the sport can be enjoyed.

A separate volume comprises a full size set of drawings to show the finer working details. The price of each volume is 7/6.

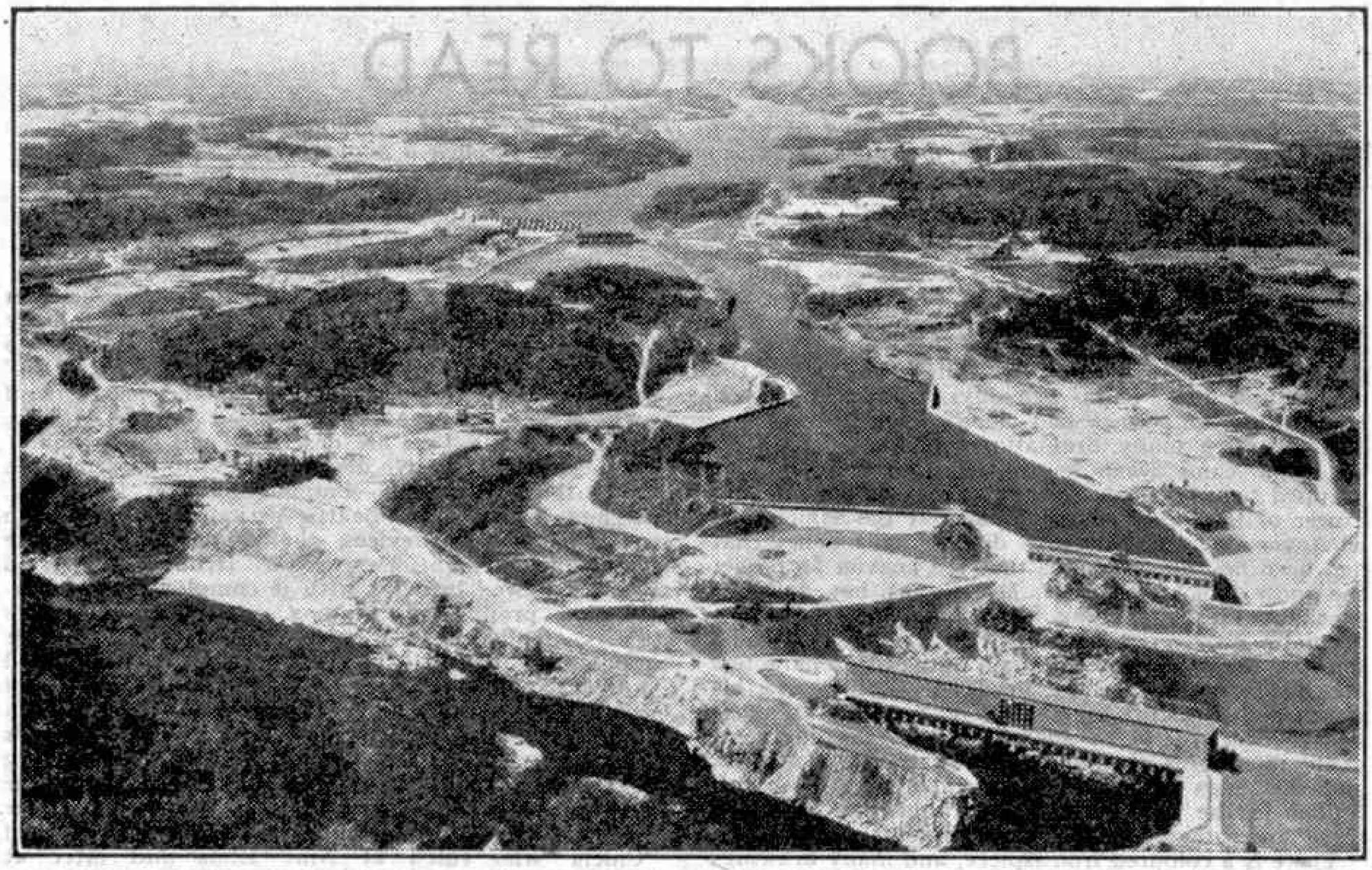
"THE RAILWAY DIGEST"

(George Lapworth and Co. Ltd. 2/6)

It is clear from the Spring issue of "*The Railway Digest*" that this is fully maintaining the interest and variety of the railway subjects dealt with in its pages. So far it has appeared twice a year, but in future there will be three issues, commencing with the one under review. The next will be published in July.

The present issue consists of 64 pages, well packed with material of railway interest. Apart from the items that are of a "news" character there is a condensed account of a statement made by Sir Herbert Walker, K.C.B., on that regular source of discussion, the Channel Tunnel, and descriptions of locomotive testing on a stationary plant and on the road. "*How Railways Do Fascinate*" is an amusing article on the railway hobby; and a notable repair by welding of a locomotive crank axle also is described.

"*The Railway Digest*" is obtainable from the publishers at Vernon House, Sicilian Avenue, London W.C., price 2/9 including postage.



The Shipshaw Power Stations

A Great Canadian Hydro-Electric Development

CANADA is a land of wonderful lakes and rivers. Its discoverers and settlers approached the country up the mighty estuary of the St. Lawrence, and for centuries this waterway and its tributaries provided the only way of penetrating into the heart of the land. In their bark canoes traders made their way far inland in search of furs, and in time the brigades travelled far inland when the Spring thaw came in order to collect the skins gathered by trappers during the winter.

Not all the rivers of Canada lent themselves to travel, for many of them were broken by rapids and waterfalls, and past these the voyagers could only make progress by portaging their belongings, carrying them over land to a new stretch of navigable water. Some rivers were particularly difficult. For instance, between Montreal and Quebec the St. Maurice enters the St. Lawrence through three channels, the origin of the name of the town of Trois Rivieres, or Three Rivers, at the mouth of the stream. The river pours down from the forested highlands of Quebec over innumerable falls and rapids, and to-day full advantage is taken of these to provide hydro-electric light and power for large areas of Quebec.

Conditions for the development of hydro-electric power in this part of the country are indeed ideal. There is ample rainfall, with a steady run off of water that reaches its highest point in spring, when the snow and ice melt, and dams built to store flood water maintain a regular supply throughout the year.

One of the most remarkable of Canada's hydro-electric power schemes has been put into operation on the Saguenay River. This enters the St. Lawrence about 150 miles below Quebec through a wonderful gorge with rock faces from 150 to 1,500 ft. in height that in places overhang the river. More than 50 years ago it was realized that here was a river that could provide hydro-electric power on an enormous scale. The first idea was to build works in which this could be used for transforming the nitrogen of the air into fertilizers. This scheme was not pursued, but plans were then made for producing aluminium with its aid. A new town, Arvida, sprang up on the banks of the Saguenay just below a point where the Shipshaw, a tributary of the river, flows into it, where works were established in which aluminium ore was electrolysed to produce the shining new metal.

At the top of the page is a general view of the Saguenay River, showing the two Shipshaw power stations, and the canal that leads water to the lower one.

The first step of course was to provide the necessary electric power. The Saguenay emerges from Lake St. John, about 30 miles above the mouth of the Shipshaw, and at a point below the lake dams were built to control the flow of the water, and a power house with the capacity of more than 500,000 h.p. was completed in 1926.

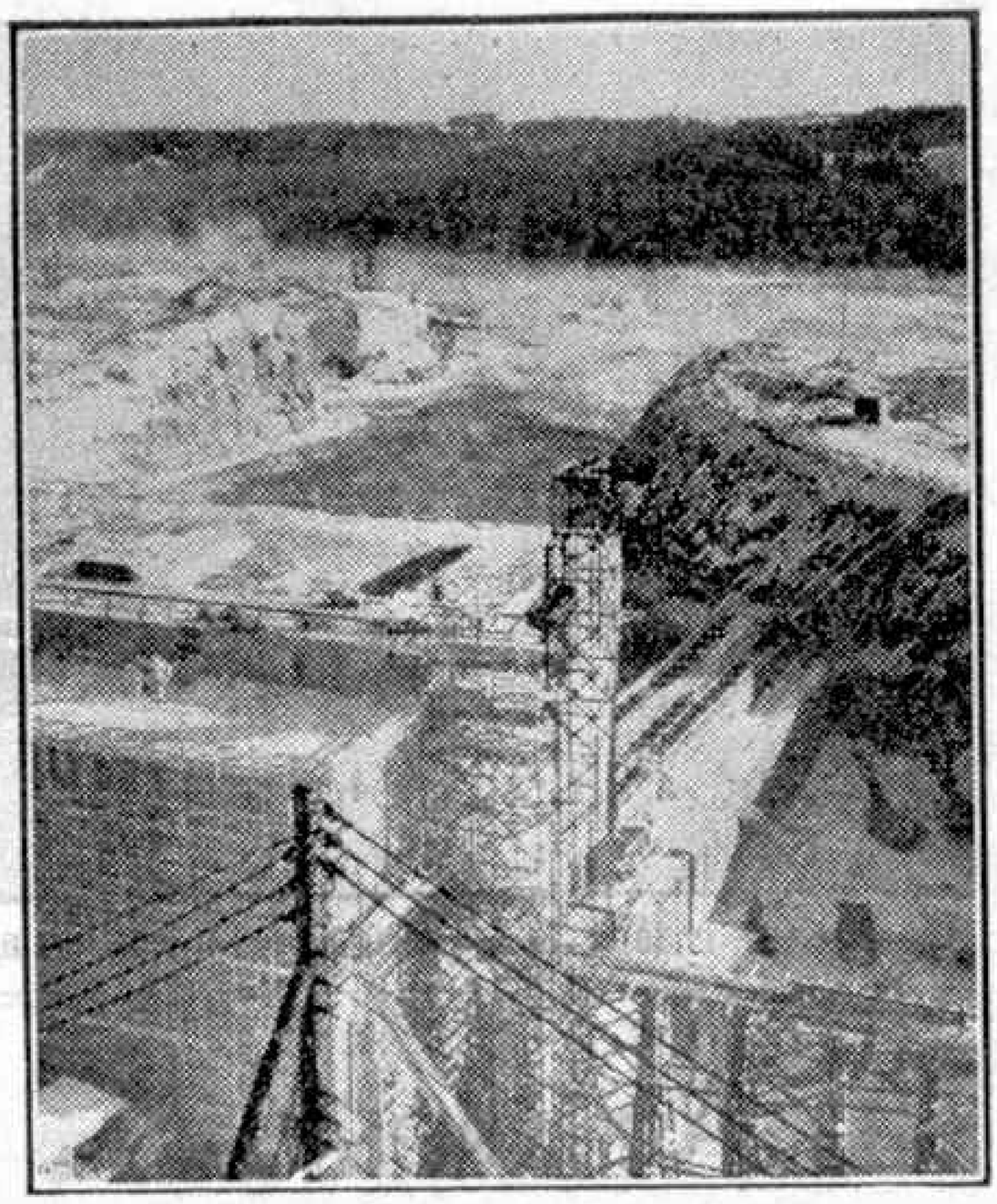
This was only the first stage in the Saguenay scheme. The second began two years later when a dam was built across the river just above rapids at Chute-a-Caron, a project that was completed in 1930. This dam was intended to serve two purposes. One was the diversion of the water of the river into a canal that would feed a great hydro-electric station in the valley of the Shipshaw. The other was to provide power immediately, and for this purpose a power house was built at one end, the water passing through the turbines of this, flowing through a new channel that returned it to the Saguenay River itself. To-day this station is known as Shipshaw No. 1 and it has a capacity of 300,000 h.p.

A very interesting part of the construction of Shipshaw No. 1 was the diversion of the river into a temporary channel leading through part of the dam while the section across its bed was being constructed. For this a great column of concrete was built on the bank of the river. This was 92 ft. high and weighed nearly 11,000 tons, and its river face was carefully shaped to make it fit the curves of the bed in which it was to rest. When all was ready a small supporting pier in front of its base was blasted away by explosives, and the huge mass slowly toppled over and fell exactly into the position designed for it. Water in the river bed acted as a cushion, and although wooden shuttering on the column was split off and thrown as far away as 300 ft., the towering mass hit the solid river bed with no more force than that if it had dropped only four inches.

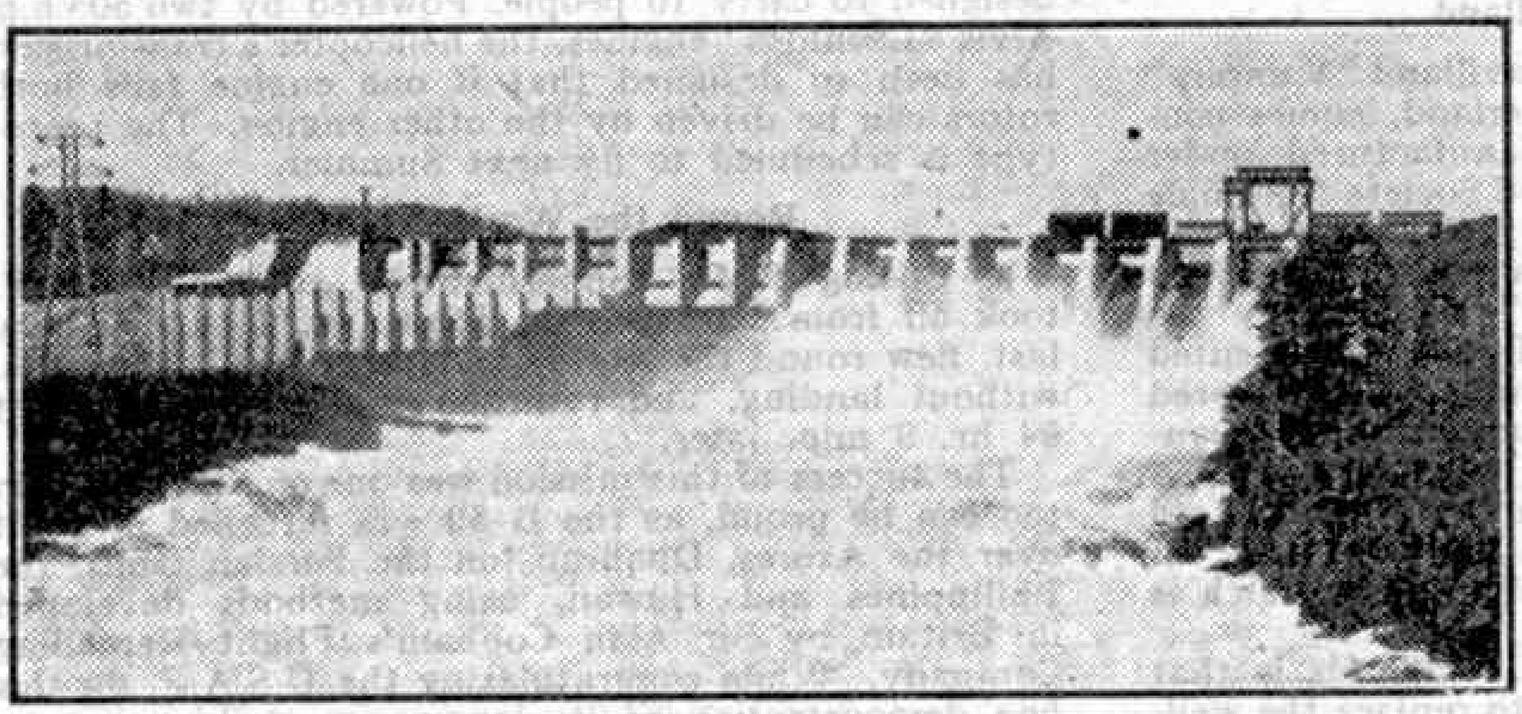
The depression of the 1930's came along at the time when Shipshaw No. 1 was completed, and the construction of the larger power station in the Shipshaw Valley had to be abandoned for the time being. The outbreak of war led to a sudden dramatic change. The demand for aluminium, chiefly from Great Britain, increased enormously, especially after the fall of France in 1940, and the aluminium works were greatly extended. Shipshaw No. 1 was incapable of supplying the enormously increased power needed, and for a time this was transmitted by land lines from the stations erected on the St. Maurice River.

In the meantime construction of Shipshaw No. 2 was started in the greatest secrecy in order to avoid every possibility of air attack on a project that was so vital. The work was pushed forward with tremendous energy. By the end of 1942 the first of the 12 giant 100,000 h.p. units to be installed was in action, and a year later, only 30 months after work was started, the remaining 12 had been completed and the station was ready to furnish 1,200,000 h.p. of electrical energy. The great building in which these units were installed housed the world's greatest power concentration under one roof, and the completion of the gigantic scheme in so short a time was one of the greatest triumphs of the engineer.

Some idea of this amazing development is best obtained by following the course of the water that provides the hydro-electric power. The canal that



Shipshaw No. 2 power house under construction. Beyond is the tail race, through which water finds its way back to the Saguenay. Photograph by courtesy of the Aluminium Co. of Canada.



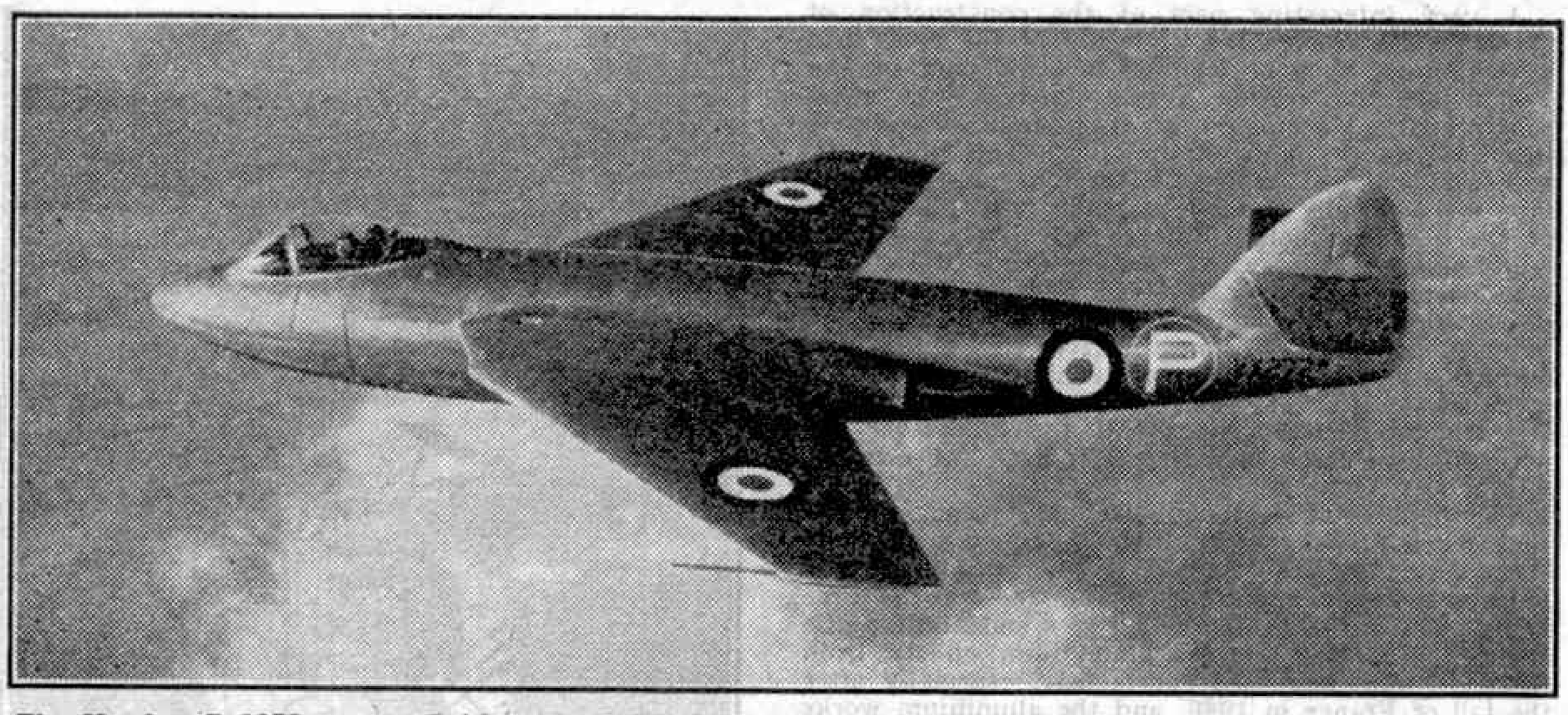
The spillways and power house of the Shipshaw No. 1 station. Photograph by courtesy of the National Film Board, Canada.

carries it to the power station is nearly a mile and a half long. It was excavated mostly through earth and gravel, but large sections had to be cut in rock, and in certain places where the ground level was low it was necessary to build concrete dams to retain the water. The finished channel has a minimum width of 500 ft. in earth section and 300 ft. in rock. The greatest depth of excavation was 105 ft.

The canal is 33 ft. deep and is large enough to accommodate most ocean liners. It ends in a forebay at the site of the great dam. This is not on the bank of the Shipshaw, as originally planned, but is about half a mile up the Saguenay, where there is a ledge of rock that provides a suitable foundation for the power house. Six shafts were driven down through the rocky slope from the headblock and these joined six tunnels, the shafts and tunnels forming the tubes, each 30 ft. in diameter, through which water from the canal passed to the power house. One reason for using them instead of great metal tubes, or penstocks, was to reduce the possibility of damage by air attack. At the time there was always the possibility that the plant would be a target for enemy bombers, and fighter aeroplanes of the Royal Canadian Air Force as well as anti-aircraft batteries were stationed in the neighbourhood right to the end of the war.

Most of the excavation required for the foundation of the power house and for the tailrace, through which the water ran after giving up energy to the turbines, was in gravel; but there was enough rock not only to ensure a solid base for the power house, but also to provide a sure anchorage for the steel penstocks that led from the ends of the tunnels to the machines. Excavation for the tail race stopped when a rock plug of 18,000 cu. yds. remained between the site and the river, into which water from the power house was to be discharged. Holes drilled into this were packed with explosive, and the charges were fired in order to demolish it at a single blow. The water on the river side of the plug was 21 ft. higher than that on the tailrace, introduced to cushion the fall, and this caused the rock to fall inward. Most of it fell exactly as planned into a trench specially dug to a depth of 10 ft. in the tailrace. Nearly 40 tons of dynamite were exploded in this tremendous blast.

The two Shipshaw power stations have a combined maximum capacity of 1,500,000 h.p., with a firm output of 925,000 h.p.



The Hawker P 1052, a new British sweptwing jet fighter. Photograph by courtesy of Hawker Aircraft Ltd.

Air News

By John W. R. Taylor

First British Sweptwing Fighters

Britain's determination to maintain her present lead in the design of single-seat fighter aircraft is exemplified by two new sweptwing jet fighters now being test-flown. The first of these is the Hawker P1052, illustrated above, which is basically a sweptwing version of the Hawker N7/46, and even faster. The other machine is the Vickers-Supermarine 510, a sweptwing development of the well-known "Attacker." Both aircraft are powered by a Rolls-Royce "Nene" turbojet; all other details are secret.

News from de Havilland

Following the news that the de Havilland "Vampire" jet fighter is to be built in Switzerland, comes confirmation that it will also be manufactured under licence in France, by the State-owned Societe Nationale de Construction Aeronautiques du Sud-Est.

The French Air Force has already taken delivery of a small number of "Vampires," supplied by the British Government, and these will be supplemented within the next few months by many more delivered from stocks and from British production lines. Meanwhile the Aero Sud-Est factory will be equipped to produce two versions of the "Vampire," the standard Mark 5 with a "Goblin 2" engine and the Mark 51 fitted with the Rolls-Royce "Nene" engine, which is already in production in France.

Another item of news from de Havillands is that the "Chipmunk" has been selected to replace the well-loved "Tiger Moth" at all Royal Air Force Reserve Flying Schools. A contract for several hundred "Chipmunks" has already been received, and tooling for quantity production is now going right ahead for both home and export sale.

Big Game Hunting by Air

The article on pages 214-6 tells how unusual animals are often brought to Britain for people to look at. Scandinavian Airlines System operate a service in the other direction, taking the people to the animals. In fact, if you want to go off and look for rhinoceros or hunt big game they will arrange everything for you.

You can fly by S.A.S. to Nairobi, where a representative of African Safaris Ltd. takes over. He equips you with a gun, tent, cameras and cooking utensils and then acts as guide during your big game hunt. A month's safari costs about £950, on top of which there is a slight outlay on each animal you shoot—but what is £50 compared to the glory of "bagging" an elephant in Kenya? If you think that is too expensive, then you can go to Tanganyika where it will cost you only £20.

Rhinoceros are £10 apiece, giraffes £15, and to provide for when you are running short of money monkeys are only 10/- each. Alternatively, if you prefer to spend your time a little more quietly, you can always stay at one of the first-class African hotels for about 18/- a day—just under two monkeys in fact!

Twin-Engined Helicopter

The French air journal "*Les Ailes*" reported recently that the Bristol Aeroplane Company have completed the mock-up of a twin-engined two-rotor helicopter designed to carry 10 people. Powered by two 505 h.p. Alvis "Leonides" engines, the helicopter's transmission has been so designed that if one engine fails both rotors can be driven by the other engine. The prototype is scheduled to fly next Summer.

Round the World Non-Stop

A Boeing B-50 "Superfortress" of the U.S.A.F. took off from Fort Worth, Texas, on 26th February last, flew round the world, a distance of 23,000 miles, without landing, and returned to its starting point 94 hr. 9 min. later.

The success of this mission was one of which Britain too can be proud, as the B-50 was refuelled in flight over the Azores, Dhahran (on the Persian Gulf), the Philippines and Hawaii, using methods developed in Britain by Sir Alan Cobham's Flight Refuelling Company. While congratulating the U.S.A.F. on this fine demonstration of its long-range striking power, we can only regret that our own Government, with all Sir Alan's resources at their disposal, lacked the initiative to make this first round-the-world non-stop flight an all-British affair.

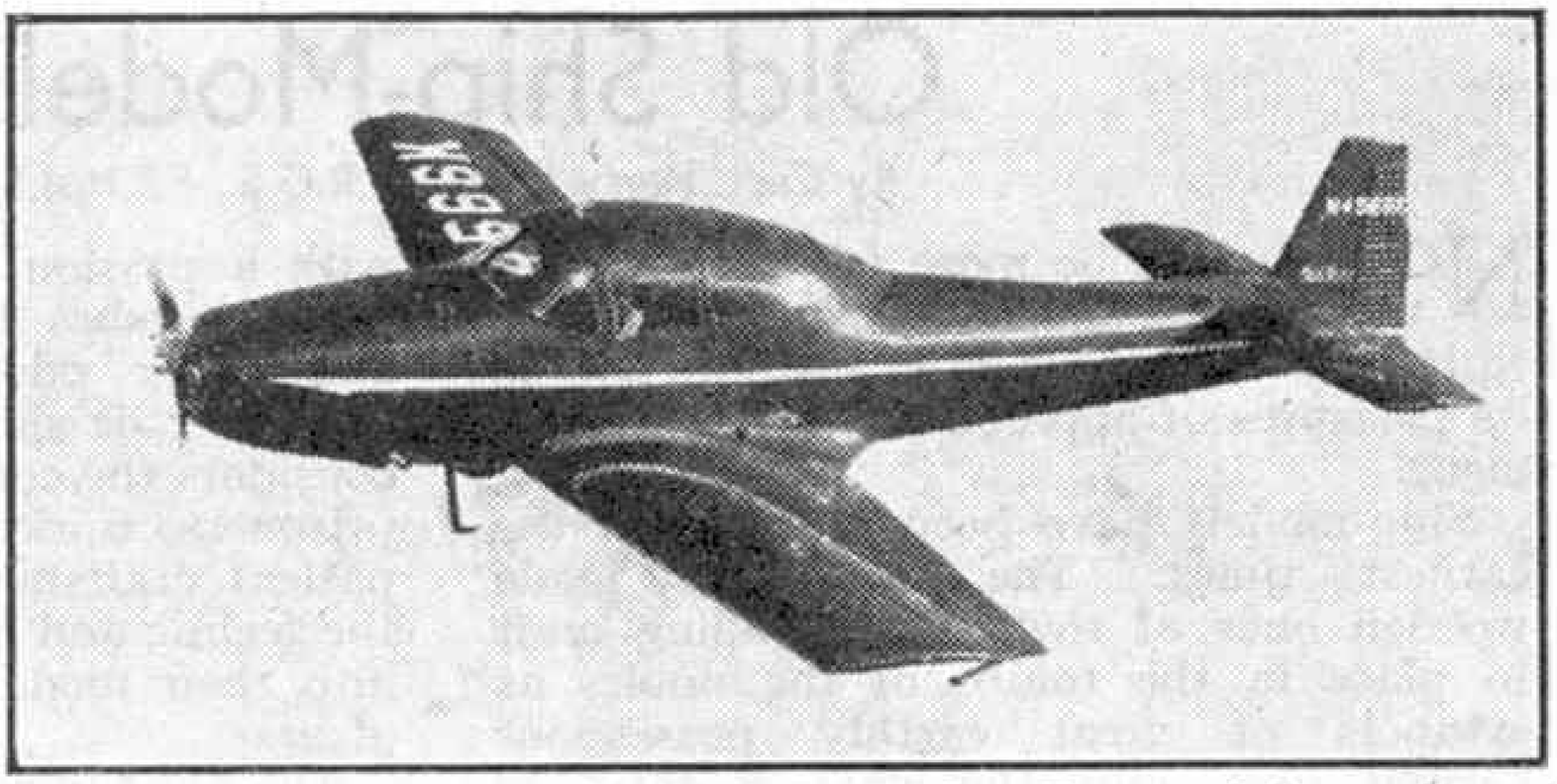
Safety Record

In March last American Airlines completed three full years of operations without a passenger fatality, during which time they flew a total of 4,154,637,050 passenger-miles. This figure means that if a pilot could have taken off in the year 1 A.D. in an aircraft that flew constantly at 200 m.p.h., he would not amass that total until the year 2371. The same company also announced on 1st April that they had become the first airline to operate an entire 300 m.p.h. fleet of aircraft. By that date they had retired the last of their "Dakotas," leaving a fleet of 50 Douglas DC-6s

and 75 "Convairliners." Their transatlantic subsidiary company, American Overseas Airlines, continue to operate "Constellations" on the London–New York run and "Skymasters" within Europe, but the "Skymasters" will gradually go into retirement in the Autumn, when A.O.A. receive their first giant Boeing "Stratocruisers."

Ryan's 1949 "Navion"

The Ryan "Navion," shown in the upper photograph on this page, is generally acknowledged to be the ideal 4-seat personal 'plane. It was designed originally by North American Aviation, to mark their entry into the post-war light aircraft market. Unfortunately the expected boom in private flying did not materialize, and N.A.A., who had spared no expense to develop their idea of a perfect 4-seater, lost so much money on the deal that they decided to end production and build only military aircraft.



Ryan "Navion" 4-seat personal 'plane in the air. Photograph by courtesy of Ryan Aeronautical Company, U.S.A.

That might well have been the end of the "Navion" had not the Ryan Aeronautical Company's executives been smart enough to buy complete rights to build it, thus getting a thoroughly proven aircraft without the costly business of developing it themselves. They redesigned some features, put it in production and soon began to sell satisfactory numbers of "Navions" at £2,250 each.

In its latest form the machine has a 205 h.p. Continental engine, which gives it a maximum cruising speed of 155 m.p.h. and enough power to get it off the ground in well under 200 yd. with a full load. The cabin is sufficiently roomy for passengers to change seats in flight, and there is space for 180 lb. of luggage behind the rear seat. Alternatively, after removing three seats the aircraft can be used as a freighter with a half-ton payload.

New Dublin-Birmingham Air Service

Last month, the Irish Aer Lingus Company inaugurated a new daily air service between Dublin and Birmingham. Flights leave Dublin Airport at 9.25 a.m. each week-day, arriving at Elmdon Airport, Birmingham, at 10.50. Return flights leave Elmdon a half-hour later, reaching Dublin at 12.55.

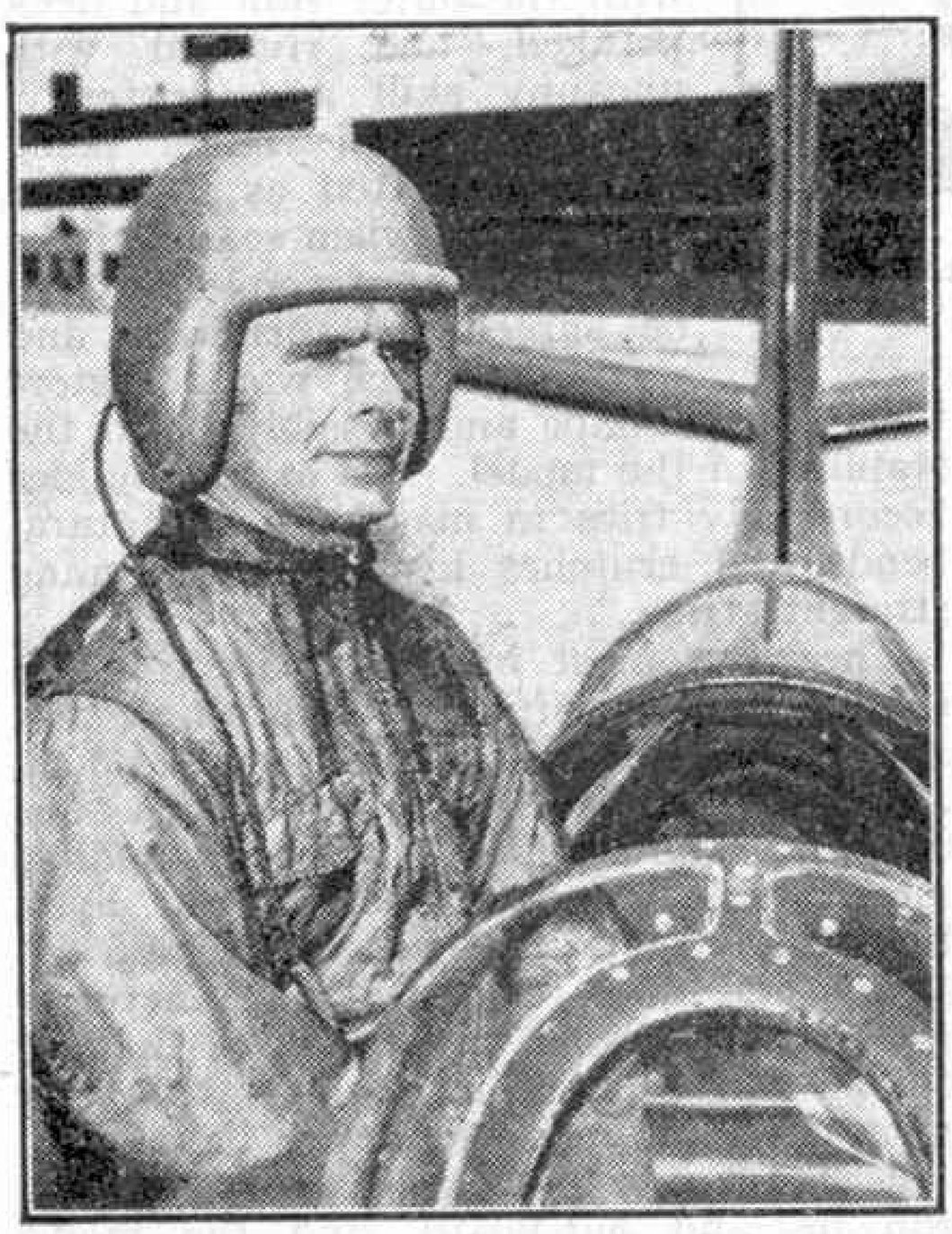
The service is very useful as it provides a new link between the industrial Midlands and Ireland. It should also prove an asset for Midland holiday-makers in search of Irish steaks, and for Irish tourists visiting the Shakespearean country, as Elmdon is within 20 miles of Stratford-on-Avon. Fares are £6/0/0 single and £10/16/0 return.

Made-to-Measure Helmets

Realizing that head injuries in aircraft crashes constitute about half the total injuries, six American Aircraft companies contributed funds to the Aero-Medical Laboratories of the School of Medicine, University of Southern California, for the development of new types of helmets for pilots. They asked for a helmet that would guard against skull fracture, brain concussion, penetrating wounds from shrapnel, harmful vibratory forces, high temperatures and wind blast. Yet it had to be of minimum size and weight, reasonably comfortable and present minimum interference with radio communication.

The result of the research is illustrated on this page—a 34 oz. helmet with a one-half to one inch spacing between the head and helmet shell, filled with cellular cellulose acetate energy-absorbing lining material. An inside layer of sponge rubber covered with chamois leather is provided, which combines with ventilation holes and rubber padding round the edge to make the helmet reasonably comfortable. Earphones are built into "pockets."

The helmets cost about £55 each, and at present are built up individually with the aid of plaster of paris moulds made on each pilot's head, but later they may be produced in a range of standard sizes.



The new "crash-proof" helmet for pilots, described on this page. Photograph by courtesy of McDonnell Aircraft Corporation, U.S.A.

The Chance Vought "Cutlass."

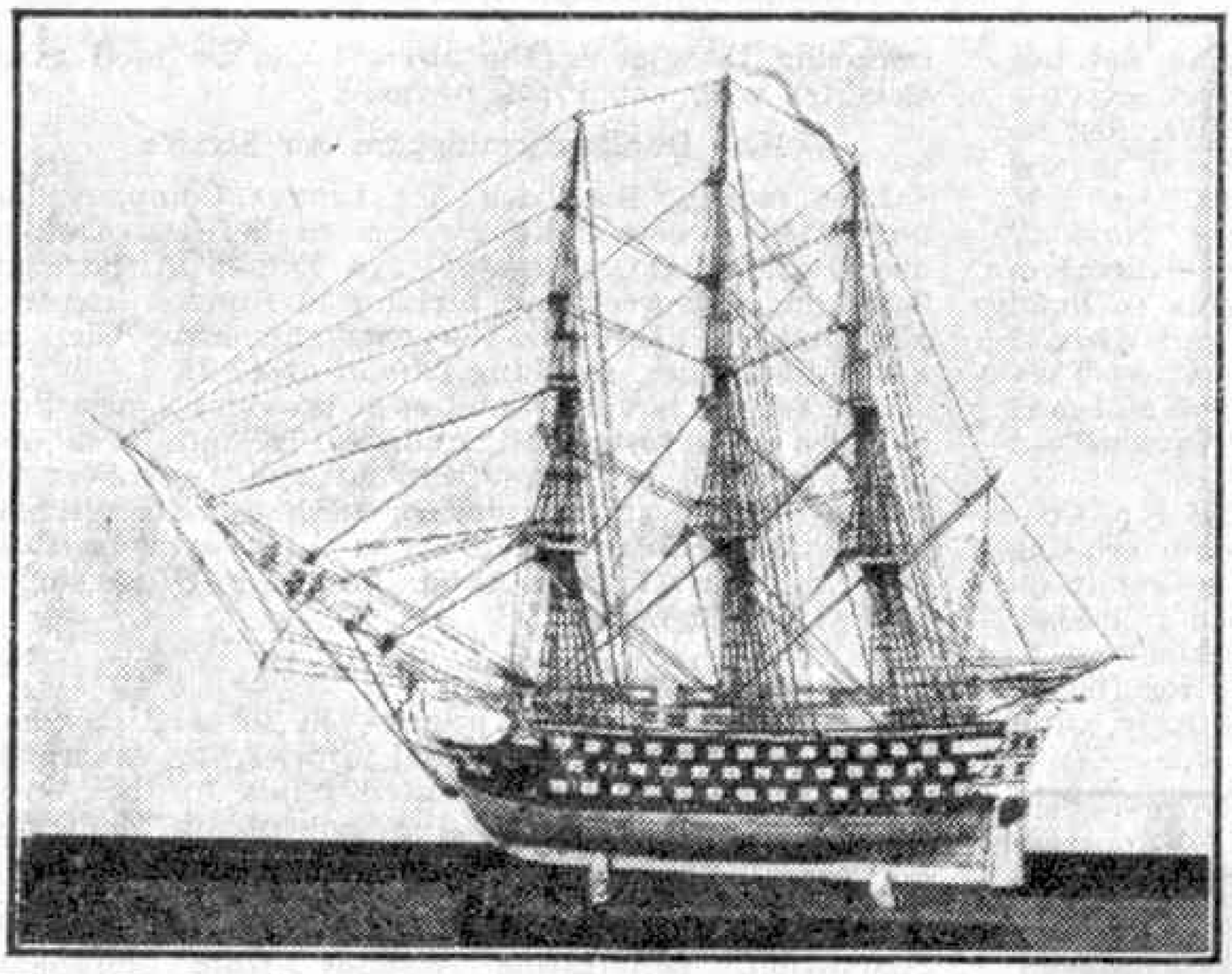
The Chance Vought XF7U-1 "Cutlass" is a new U.S. Navy twin-jet fighter designed for carrier operation. It is tailless, with sharply swept-back wings, and two powerful Westinghouse turbojets mounted in the rear of its slim fuselage—features which combine to make it one of the world's fastest aircraft. The "Cutlass" has two vertical fins and rudders at the trailing edge of its wing, but is controlled mainly by two "ailavators," combined ailerons and elevators. To relieve physical strain on the pilot through forcing over the controls at high speeds, all controls are worked through a hydraulic "boost" system. The cockpit is pressurized and fitted with an ejector seat.

Old Ship-Models

By Capt. Harry Parker, F.R.G.S., F.R.Hist.S.

NO study can be more fascinating than that of old ship-models, and those new to it may welcome a brief introduction to its pleasures of appreciation and appraisement.

Ship-models have been made from the earliest times. The Egyptians made wooden ones of rowing and sailing craft to place in the tombs of the nobles as symbols of great earthly possessions carried over into the next world. As offerings to the gods, spirits or demons controlling currents, storms, and calms—to ensure favourable weather for the real ships, their prototypes—they figured in a primitive rite still practised in West Cornwall, Eire and Guernsey on Good Friday, when every fisher-boy, following traditional custom, sails his toy-boat to herald the opening of the fishing season.



The "Barfleur," British 98-gun ship of 1768. Planked hull, masts and spars fashioned entirely from bone. Rigged with black cord. Guns fashioned from copper and fitted with a device enabling them to be run in and out. Length 13 in.

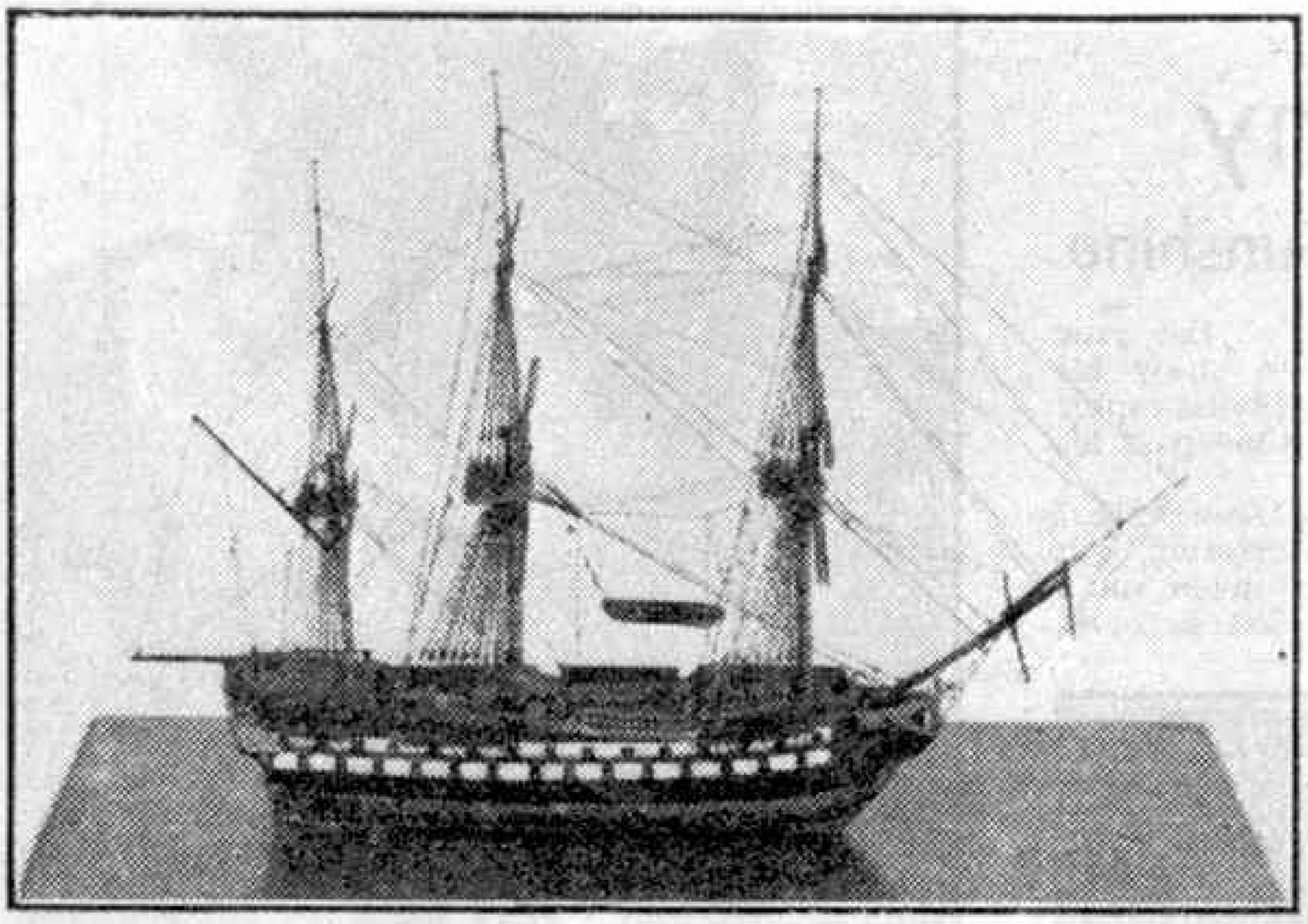
The most remarkable of these maritime antiques are the Napoleonic Prisoners-of-War bone and ivory models of the late 18th and early 19th centuries. Men who had sailed and fought in the prototypes wished to commemorate their ship's record, so they constructed—as a labour of love—the most faithful miniature a pocket-knife and other crude tools and materials could improvise.

Seamen have always been handymen with a passion for making things in the quiet watches from bits of wood, twine and other oddments begged from the carpenter or ship's stores. But when one considers the conditions under which these prisoners worked one marvels at their patient craftsmanship and ingenuity, and the feeling and character that they infused into their models make them true works of art.

The most important factors are accuracy of detail and finish. Think of the meticulous care necessary in building a model to the approximate scale of an eighth-of-an-inch to the foot—1 in 96—or even smaller. By the time you get down to capstans you are dealing in match heads; a bolt-eye may resemble the eye of the finest needle. Yet everything must be proportionate.

The basic item on which all ornament and superstructure is founded is the hull. The finest are built of frames and beams from the keel upwards, with the outer skin and deck planked, and rivetted with uncanny skill and dexterity, each individual timber being separately fitted as in a real ship. Even when seasoned the slender strips of wood used may be subject to shrinkage and warping, which would distort the queenly shape and possibly harm the stability of the model. The expert builder accordingly tries to make use of natural bends and crutches instead of steaming straight strips.

The next most important item is the rigging. The uninitiated might think that any tangle of ropes would serve as long as it looked realistic; but when one examines the rigging of these incredible models—the minute blocks, dead eyes, lanyards, cleats, splices, eyes and so forth—one finds that they are actually *workable* and exact miniatures of the real thing. All the running rigging, as distinct from the standing or fixed, can be worked; sails can be handled, in some cases guns run in- and out-board, and the model manipulated in the same way as the prototype ship.



The "Scipion," a French ship of 74 guns. Model constructed by French prisoners-of-war. Length 13 in.

A quality model can also be judged by the superior artistry of her stern galleries, figure head, gun ports, lanterns, belfries, balustradings, the finish imparted to deck structures, and the tapering of her masts, spars and booms.

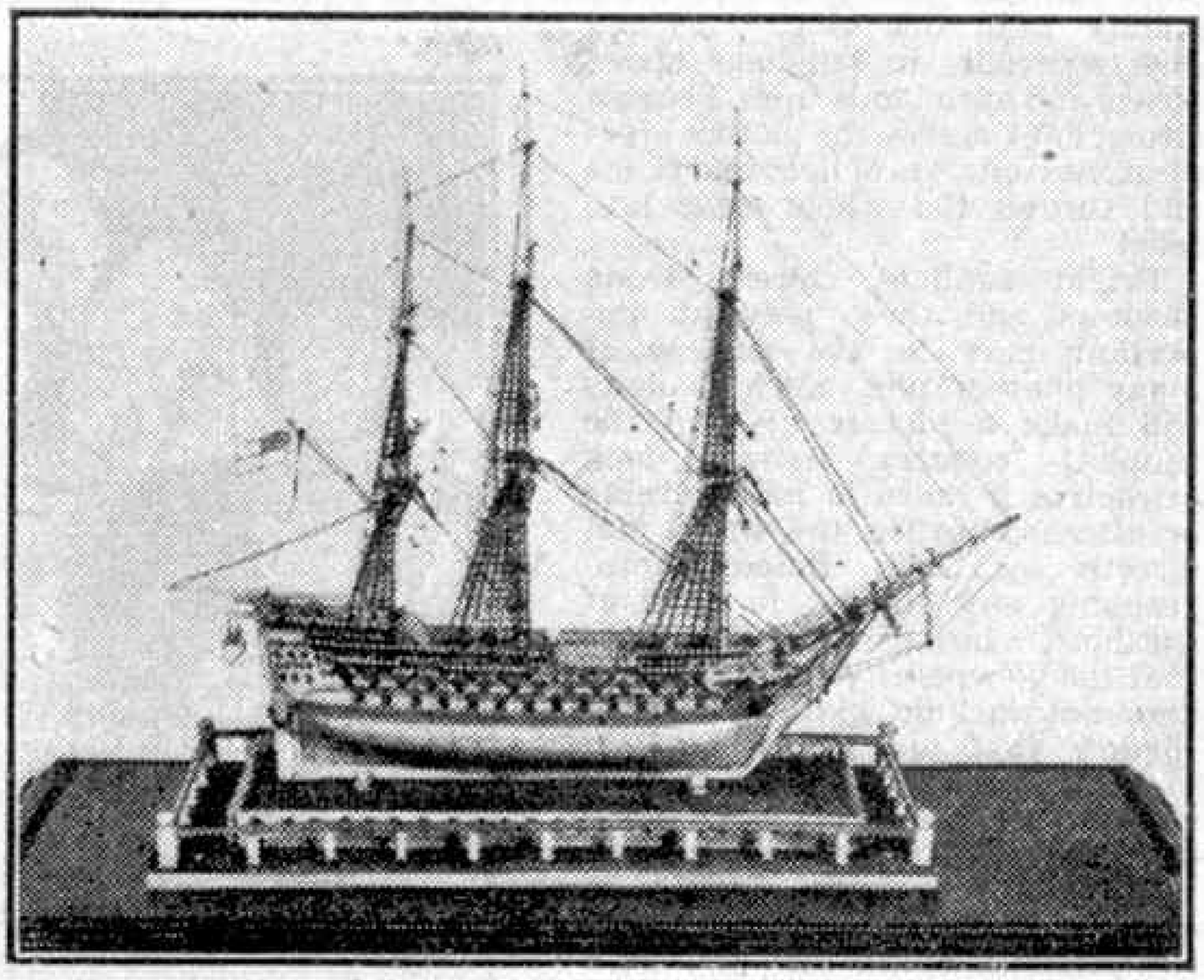
A few surviving models have every detail down to the last bolt or tree-nail in the hull, the last lashing in the rigging, as exact as in the original, so that to run over the model thoroughly is like going over the actual ship. These Napoleonic models are not only factually right but things of joy, superb and unique ornaments that defy imitation. They were made mostly with ivory or animal bone saved from prison rations, then sawn into "timbers" and fastened together by brass pins; fitted and rigged with anything salvaged from camp dustbins or passed in by visitors.

The prisoners made them whilst confined in Porchester, Princetown, Caernarvon, Norman's Cross, Peterborough, Taunton and elsewhere during the wars with France. Among them were many skilled craftsmen such as carvers and ivory workers from West Africa who had been pressed into the French Navy when Nelson and his gallant comrades were becoming a menace. Breton jet-carvers, Dieppe jewellers and watch-makers, all joined in the task of whittling down the bones and shaping them with home-made saws, chisels, and other tools. Finally the old professional French sailors got to work erecting the wonderfully intricate rigging—sometimes at the expense of the craftsmen's pigtails! Gold ear-rings and other personal trinkets were hammered out to provide strapping for the masts, hinges for the rudder and similar minute metal parts.

When the working parties had assembled the models they were sold to prison officials, Naval officers, or local curio dealers, many of whom were not above smuggling small tools and material into the prisons in the hope of acquiring one of the finished masterpieces.

Contemporary models of old-time ships are to-day very rare and precious. Most have found permanent homes in the world's museums, especially in the U.S.A. Others have been destroyed—the whole of one London collection comprising about fifty was totally blitzed—and a great number ruined by neglect. The few that remain are keenly sought after, and when in fine condition, are of considerable value—for an historic object which is rare goes up in value with the years, never down. It is the rare things of beauty that help to make our life worthwhile, redeeming it from everyday drabness and monotony.

Without these models, (*Cont. on page 244*)



The "Glory," British 98-gun ship, of 1788. Bone model constructed by French prisoners-of-war. Set on original inlaid wood base and in a glass case. Length 15¼ in.

Photography

Making the Most of Sunshine

THE long sunny days at this time of the year invite the amateur photographer to enjoy his hobby to the full, and with more photographic supplies now available than for a long time past his opportunities are greatly increased.

Sunshine gives life and sparkle to scenes that otherwise would appear dull and uninteresting, but it does not follow that every picture taken on a sunny day will be successful just on that account.

Rhododendrons. Photograph by Miss A. Roe, Sheffield.

Even with correct exposure pictures taken with the sun right behind the camera are generally disappointing, as they tend to have little life. The details all come out equally clear and there are no points of interest. Most subjects photograph best when they are lighted mainly from one side. This applies especially to buildings, street scenes and open landscapes, because strong light across the picture gives pleasant contrasts of light and shade and throws the whole scene into relief.

Bright sunlight causes strong shadows and these play an important part in the success of many photographs. Such shadows will make a picture of even the simplest country cottage look attractive if taken in mid-morning or afternoon when the sun is not directly overhead. Before photographing any subject in brilliant sunshine, however, make sure that the viewpoint you have chosen does not include black masses of shadow that are not wanted; if necessary move a little to the right or left to avoid them. If the scene is one that you are very keen on taking, it may be well worth while waiting an hour or two until the positions of the shadows alter.

Beginners are often advised not to take photographs with the sun directly in front of the camera, as the direct rays of the sun will

Planning the route. Photo. by AC1 R. Atkins, Eccles.

be reflected and scattered by the lens, thus causing the peculiar and unpleasant effect known as halation. This is wise counsel up to a point, but if one takes the precaution of shading the lens so that the sun does not shine directly upon it, very striking effects can be obtained sometimes by photographing against the sun.

A cloud passing across the face of the sun temporarily destroys the pleasant contrast of sunlight and shadow. If you have the tantalizing experience of this happening just when you are ready to take a good subject, be patient and wait until the sun is clear again. The picture you get will amply repay you for the delay.

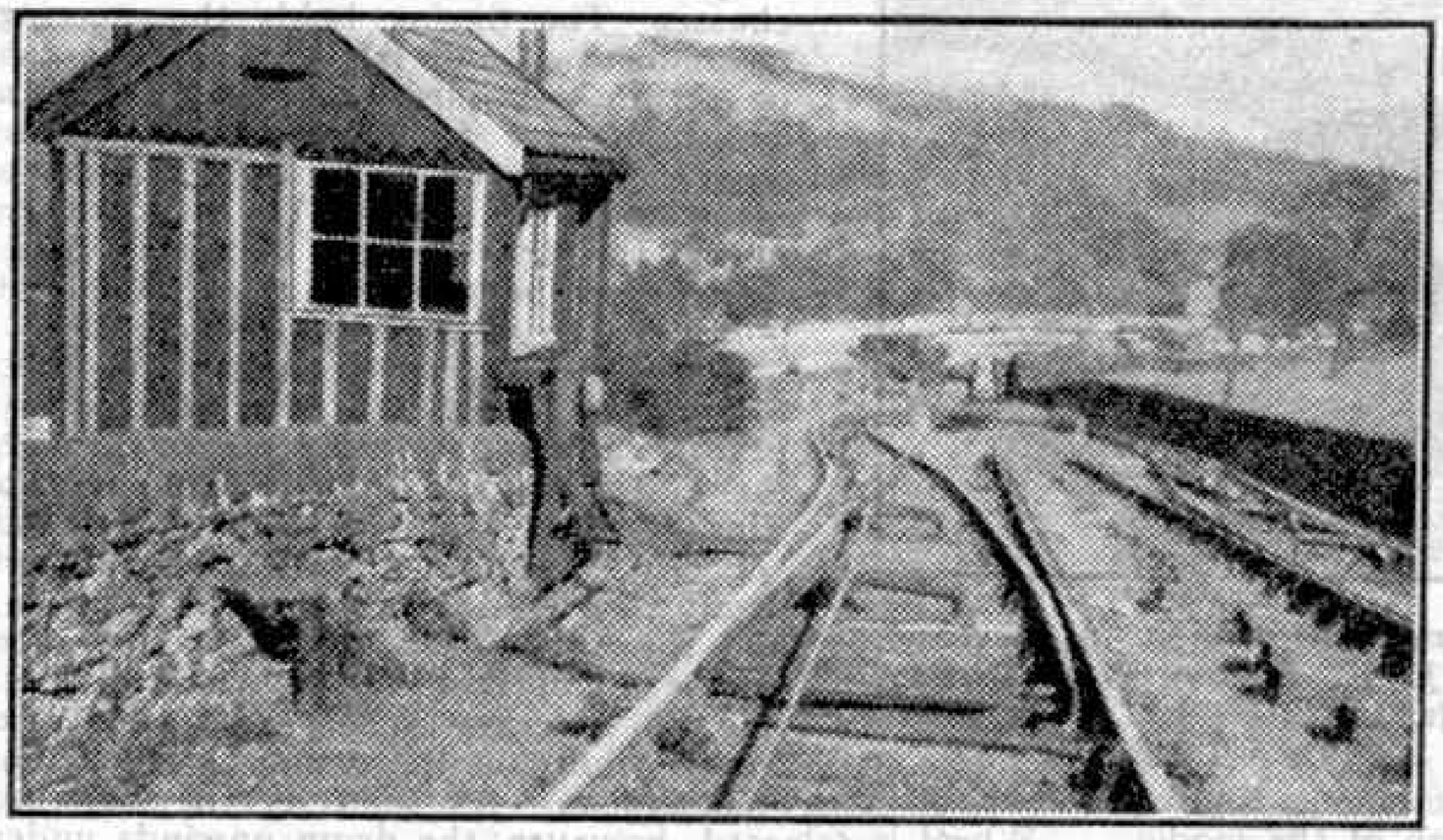
"Four friends." This delightful picture from New Zealand was taken by Miss H. Milne, Hawkes Bay.

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

A PIT FOR RUNAWAY TRAINS

The appearance in the January "*M.M.*" of a description and photograph of the Cromford and High Peak Section of the B.R., (L.M.R.), reminded me of a visit I made there in 1937. This has one very interesting and unusual feature shown in the accompanying picture, which was taken on the incline above the road overbridge.



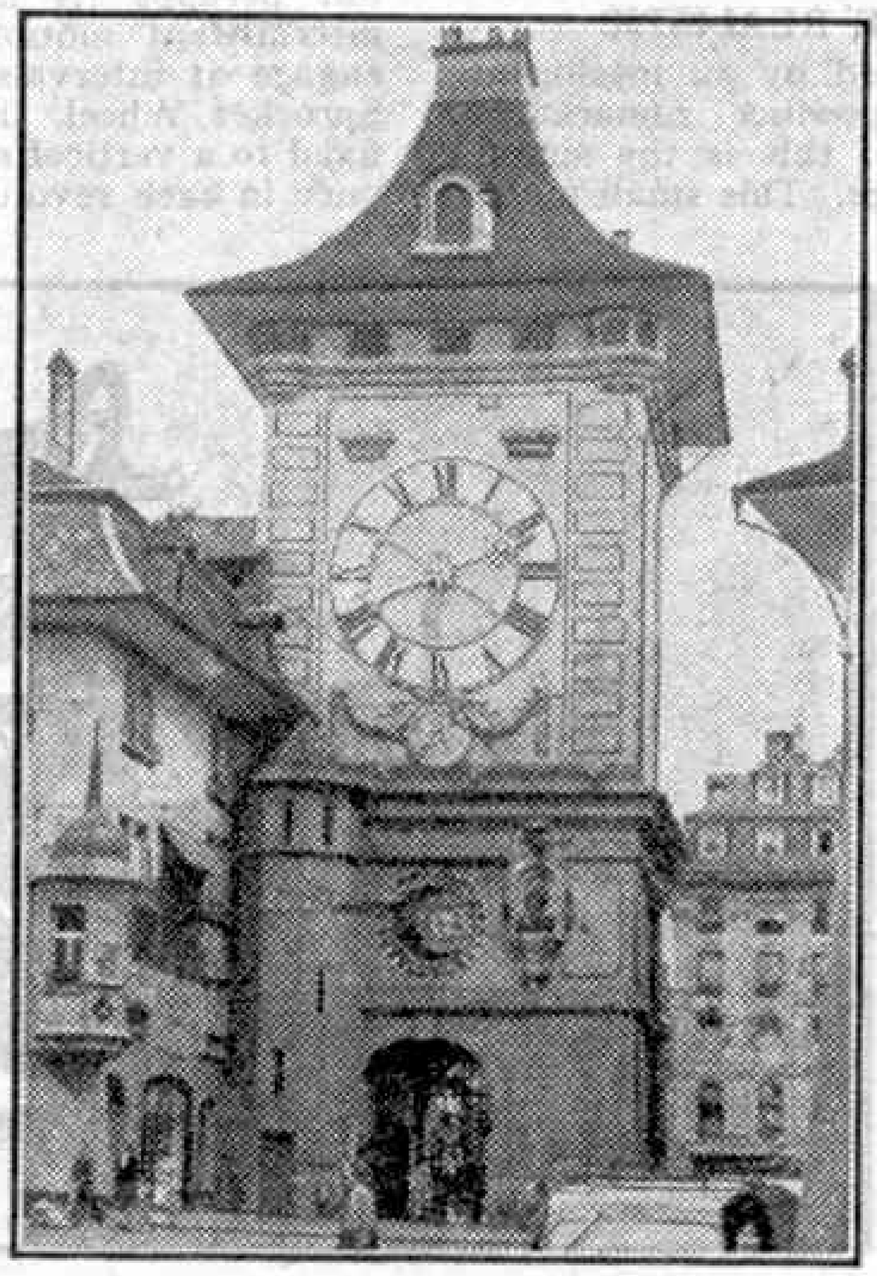
Safety points on the Cromford and High Peak Railway. Photograph by D. O. Whitehead, Derby.

It will be seen that a pair of points is included in each track; the turnout of each curves back again to pass under the road bridge and so into the yard at the foot of the incline. The straight portions, however, end abruptly, and the points normally are set for this direction. The idea is that if a train, either ascending or descending, becomes out of control and runs away down the incline, it will pass off the end of the rails. It would then fall into a pit, and so damage in the yard below would be avoided. When a descending train has reached a point close to that shown in the photograph, and is known to be under control, the points are moved over, operated from the cabin seen on the left, and the train continues via the turnout into the yard below. I have no information as to whether use has ever had to be made of this safety precaution.

D. O. Whitehead (Derby).

A WONDERFUL CLOCK

The clock tower of Berne, the Swiss capital, stands in the mediæval part of the city. It is at the junction of four ancient and picturesque cobbled streets with arcaded pavements and window boxes that in the summer are gay with geraniums or petunias. In the middle of the streets are playing fountains, brightly coloured, and with grotesque figures.



The clock tower of Berne, Switzerland. Photograph by E. C. Ive, Reading.

The clock was built by Caspar Brunner, a master clock-maker, about the year 1530. It shows the time on the large dial, and a smaller dial shows the day of the month, the month and the signs of the Zodiac. To the right of the smaller dial is the "musical box." In the centre of this is the seated figure of a King holding an hour glass. On one side of him is a cock and on the other a lion, while beneath his feet is a bear. Above his head is a jester with two small bells.

Quite a little crowd gathers when the clock is about to strike, and this is what happens. Four minutes before the hour, the cock crows and beats his wings. Then the bear comes out and circles round beneath the king, and the jester rings his bells. The hour is struck by a knight right at the top under the steeple. As he strikes the bell the king turns his hour glass and counts the strokes. Afterwards the cock crows again.

E. C. Ive (Reading).

RED RAIN

The idea of red rain seemed to me fantastic until I actually saw it fall in Melbourne. There the heat can be terrific and unless you happen to be an Australian, conditions become rather trying. You begin to feel limp and to wish that it would rain. Then all at once the wind springs up and a change in the weather arrives. So does the dust, which is red and comes from a district called the Mallee, north of Melbourne, where the soil is brick red and very fertile. Unfortunately it is also bone dry, and unless it is irrigated from the Murray River, one of the slowest in the world, little will grow there except mulga wood and clumps of stunted gum trees.

As a result at certain times of the year, when the wind is in the right mood, this red dust is swept up into the air and carried along, to settle in the city streets. Eventually the rain begins to fall, and to your surprise it is quite red. When the rain stops the air is clean and fresh again and the Sun begins to shine, while the red mud on the streets is swept up and carted off as soon as it is dry.

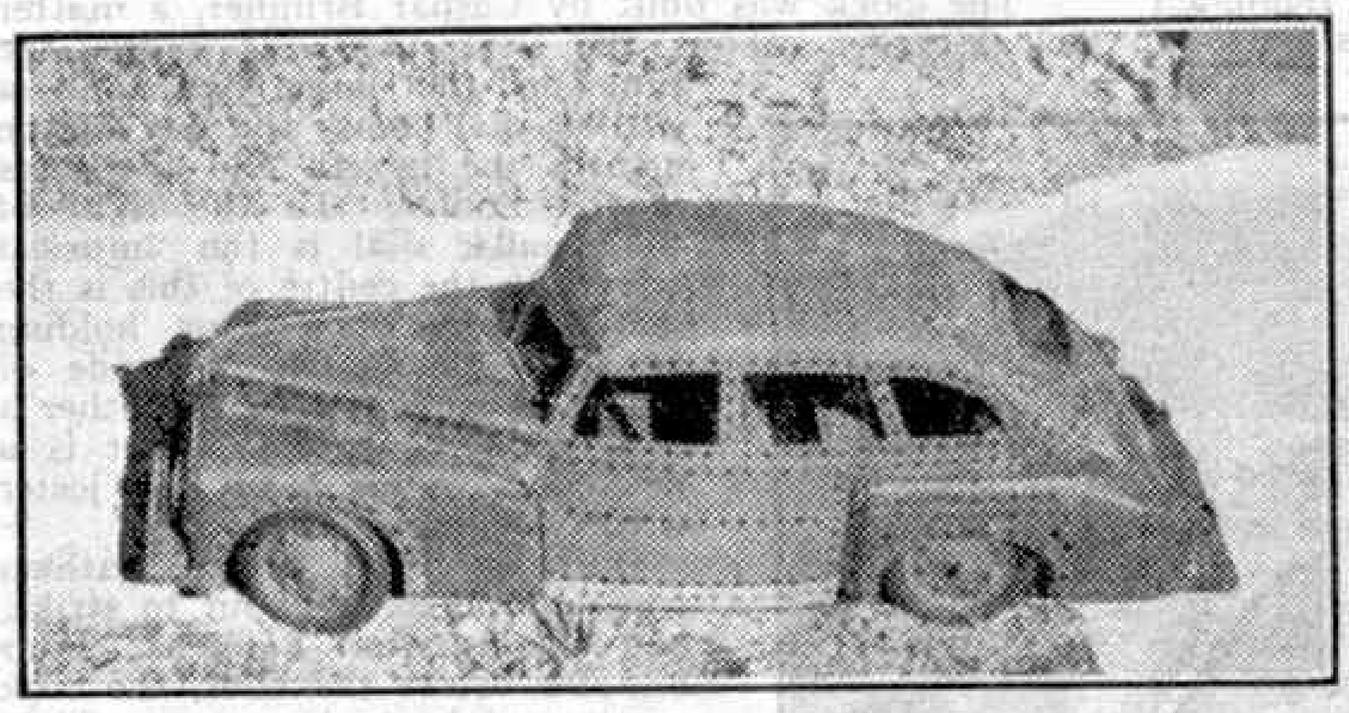
John G. Crawford (Bishop Auckland).

Among the Model-Builders

By "Spanner"

AN AUSTRALIAN RE'.DER'S FINE MODEL CAR

Owing to the super streamlining of most American cars considerable skill is required to model them realistically without bending too many of the Flexible Plates and Strips used in their construction. I was therefore particularly interested in a fine model of this kind built recently by J. K. Saxton, Neutral Bay, N.S.W., Australia. A photograph of the model, which represents a Dodge Sedan designed for use in Australia, is reproduced on this page. The model is 30 inches long and 10½ inches wide. No mechanism is fitted in the chassis, except Ackermann steering gear, as Mr. Saxton wished to concentrate on reproducing the bodywork as neatly and accurately as possible. I think readers will agree that he has been very successful in his efforts.



A fine example of modern bodywork construction in Meccano. This realistic car is the work of J. K. Saxton, Neutral Bay, N.S.W., Australia.

SIMPLE MODELS CAN BE REALISTIC

A few Meccano parts assembled by an intelligent and knowledgeable boy can produce remarkably realistic results. An example of this is the simple little bulldozer shown on this page. This small model was built by Peter Lewis, Flamborough, and I think it is a very good effort for a boy just over 10 years of age. The model is most realistic in appearance, and within the limits allowed by the few parts used, the constructional details are very neatly carried out. I shall look forward to receiving more good models from this contributor and I congratulate him on his work.

REMOTE CONTROL STEERING

S. Wood, Queenborough, Kent, an enthusiastic model-builder and Secretary of the Borden Grammar School M.C., has sent me details of the interesting device for operating the steering mechanism of model vehicles by remote control illustrated on the opposite page.

A 7½" Angle Girder fitted at each end with a ½" Reversed Angle Bracket 1 is used for the front axle beam, and a 1½" Rod is mounted at each end in the Angle Girder and the Reversed Angle Brackets. Each of these Rods is fitted with a Coupling 2 and a Crank 3. The Cranks are connected by a 7½" Strip held by lock-nutted bolts.

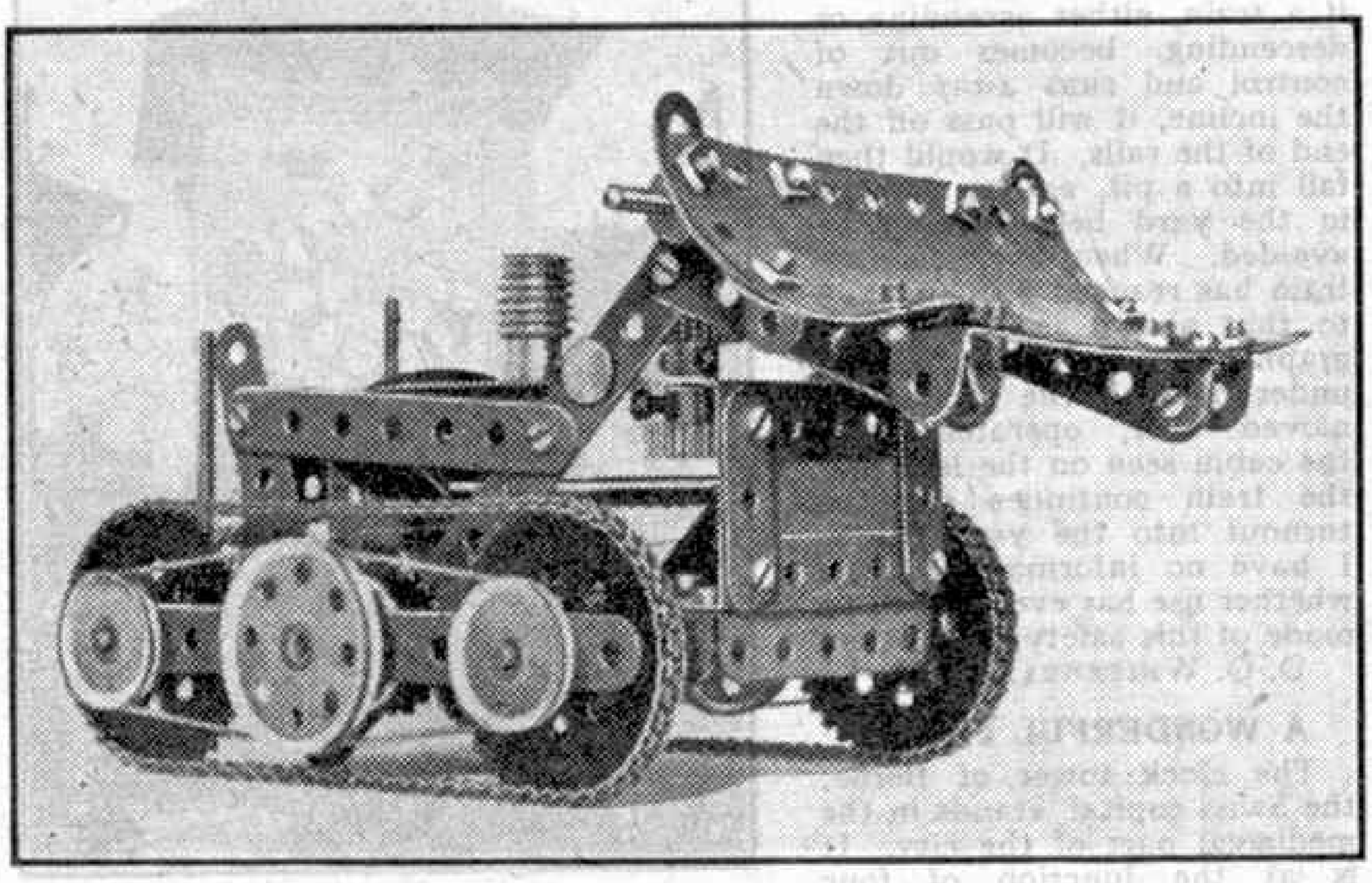
A 2½" Rod 4 is fixed in one of the Couplings 2, and one end of a Tension Spring is passed over the Rod and held in place by Collars. The other end of the Spring passes over a Rod mounted at the front of the chassis. The Spring holds the steering mechanism at full left lock, but it can be set in any position by means of a length of wire 5. This wire forms the inner core of the control cable, and is attached to the Rod 4. The wire is then passed through a length of Spring Cord, which may be fixed at any convenient point in the chassis by Collars.

The steering unit consists of two 2½" × 1½" Flanged Plates connected by Flat Trunnions. A Rod 6 passes through the Flat Trunnions, and is fitted with a winding drum formed by two ½" Flanged Wheels. One end of the wire 5 is clamped firmly between the Flanged Wheels, and the Spring Cord is attached to one of the Flanged Plates by two Collars. As the Steering Wheel is turned the wire 5 winds on the drum, thus turning the steering mechanism. As soon as the Steering Wheel is released, however, the drum unwinds under the action of the Tension Spring.

HOW TO USE MECCANO PARTS

Centre Fork (Part No. 65).

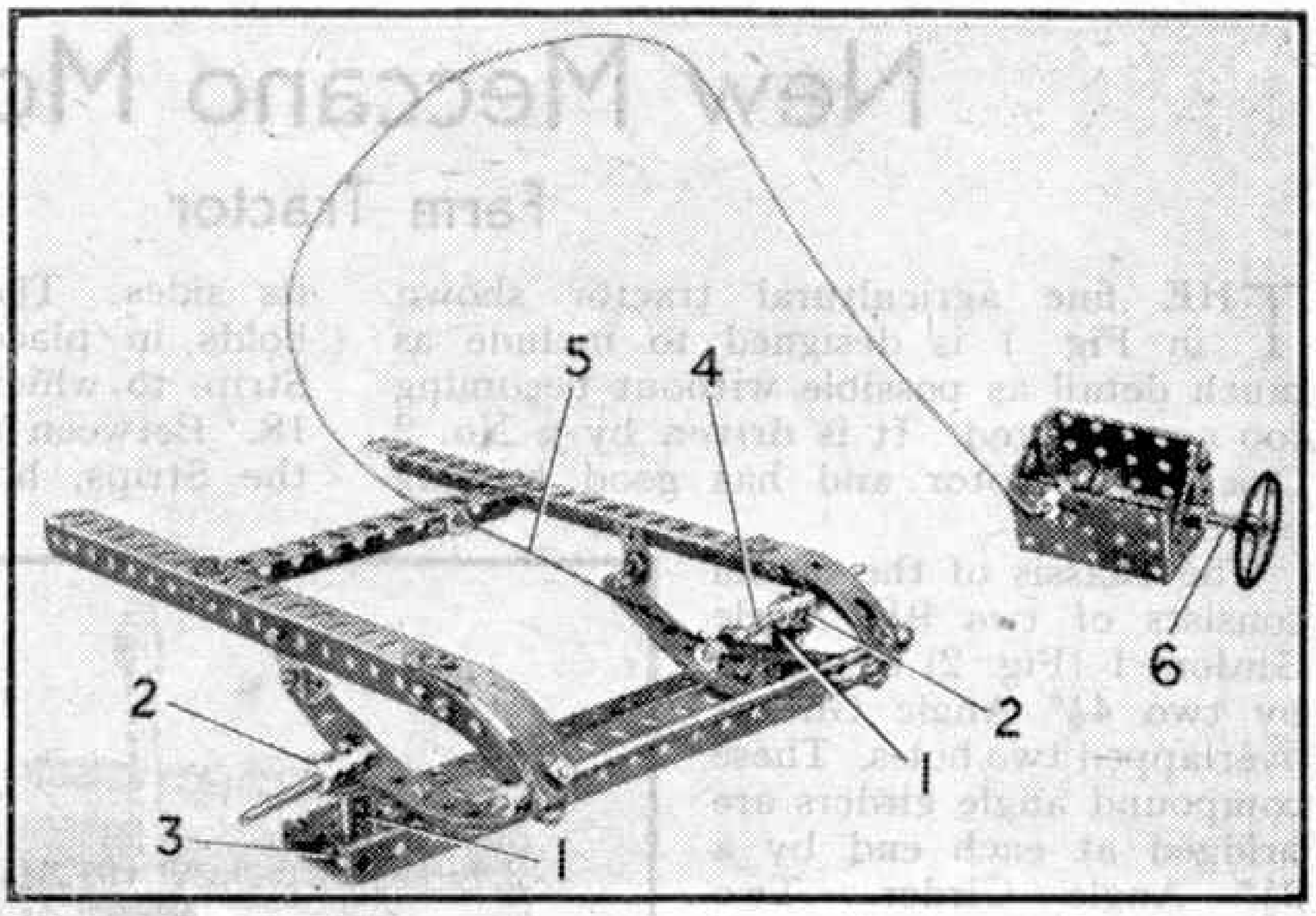
The Centre Fork is a part that many model-builders seem to overlook, but it has many very useful functions. For example, it can be used as a small pointer in certain Meccano indicating appliances, but perhaps its most important application is in intermittent motions where it can be arranged to engage at intervals the teeth of a Meccano Gear or Sprocket Wheel. For this purpose the part can be fixed to a vertical rotating Rod, and arranged so that once in each revolution of the Rod, the Centre Fork



A simple model bulldozer that consists of only a few parts. It was built by Peter Lewis, Flamborough.

engages with and partially turns a Sprocket Wheel fixed on a second vertical Rod.

Another use for the Centre Fork is in making a "knife edge" bearing, a type of bearing required in models such as weighing machines and harmonographs. It is used in this way in the illustration below which shows the pivot of the beam in a Meccano platform weighing machine. Two Centre Forks are fixed in a Coupling mounted on the beam, and their points rest between the teeth of two Pinions supported on a Rod mounted in the column of the machine. The beam is thus able to rock freely about the point of support.



A remote control steering device for motor vehicles. It was suggested by S. Wood, Queenborough, Kent.

Advanced Model-Builders Competition

A CHANCE FOR MECCANO EXPERTS

In reply to many requests we announce a competition designed specially to interest advanced and expert model-builders. It is not likely that beginners in Meccano will have the necessary knowledge or technical skill to compete successfully in this contest, but there is nothing to prevent them from sending in entries if they wish to do so. If this contest is a success a series of competitions on similar lines will follow.

In these contests we intend to state a particular mechanical problem, and to invite competitors to try their skill in solving it. This month's problem is as follows: A machine is required to fill continuously small round boxes, each with 10 pills, and to place a lid on each box. Competitors are asked to submit Meccano models of machines suitable for carrying out these operations. There are of course many different methods by which the work can be done, and competitors will find plenty to exercise their ingenuity and skill in designing a machine based on their own ideas.

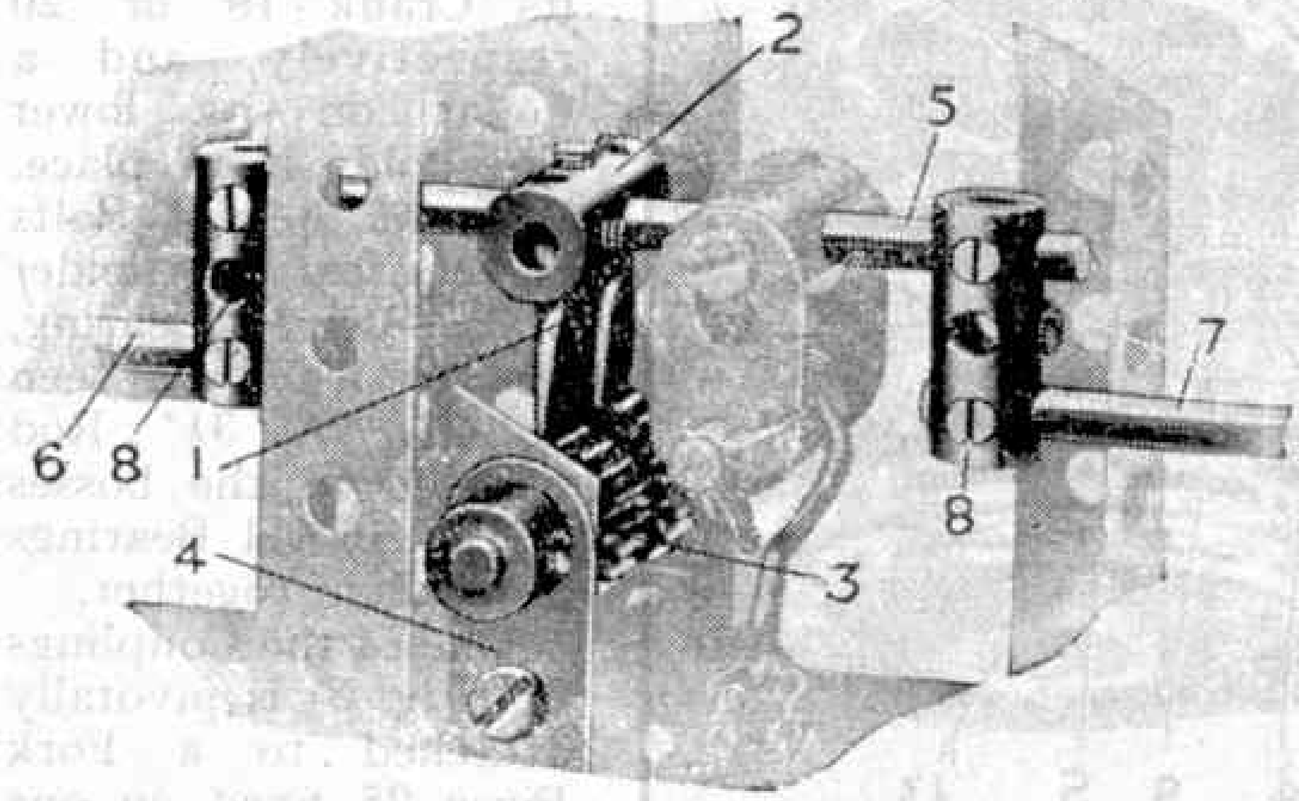
Only the essential parts of the mechanism, sufficient to show how the various operations can be performed, need be built. For example, a machine of the kind required by the conditions of this contest would include (1) a storage hopper and feeder conveyor for the empty boxes; (2) mechanism for counting out 10 pills into each box; (3) mechanism for placing the lid on the box and; (4) some means of removing the filled box to allow another to take its place; entries therefore must show how these movements are obtained.

The prizes to be awarded for the best entries are as follows: First, Cheque for £3/3/-. Second, Cheque for £2/2/-. Third, Cheque for £1/1/-. There will be also five prizes each of 10/6.

The competition is open to readers in any part of the world and will remain open for entries until 30th November next. The extended closing date will give model-builders ample time to think out and build their models and prepare illustrations.

Photographs or good sketches of models, together with a written description of the essential mechanism, are all that is required.

Entries should be addressed: "*Advanced Meccano Competition No. 1, Meccano Ltd., Binns Road, Liverpool 13.*"



Centre Forks used to provide a knife edge bearing for the beam of a weighing machine.

June Meccano Competition

OPEN TO MODEL-BUILDERS OF ALL AGES

This month we announce a new general model-building contest for Meccano models. Models may be of any size and description, but competitors should look out for new and unusual subjects for their models.

Original, well-designed models of this kind, even if they use only comparatively few parts, will be preferred by the judges to large ones displaying no originality in the use of parts or in the choice of subject.

After completing their models competitors should obtain suitable illustrations and send these to "*June General Model-Building Contest, Meccano Ltd., Binns Road, Liverpool 13.*" A photograph is preferable, but a reasonably clear sketch will be satisfactory. The competitor's age, name and address must be written on the back of each illustration submitted.

Entries will be divided into two Sections, A, for model-builders living in the British Isles; and B, for Overseas competitors.

The following prizes will be awarded in each Section: First, Cheque for £3/3/-; Second, Cheque for £2/2/-; Third, Cheque for £1/1/-. Five prizes each of 10/6 and five prizes each of 5/-.

Closing dates: Section A, 30th July; Section B, 30th November.

New Meccano Models

Farm Tractor

THE fine agricultural tractor shown in Fig 1 is designed to include as much detail as possible without becoming too complicated. It is driven by a No. 2 Clockwork Motor and has good hauling power.

The chassis of the model consists of two 9½" Angle Girders 1 (Fig. 2) extended by two 4½" Angle Girders overlapped two holes. These compound angle girders are bridged at each end by a 2½" Angle Girder. Two 2½" × 1½" Flanged Plates 2 and 3 are attached to the compound girders in the positions shown, by three ¾" Bolts 4, and the space between the Plates is bridged by a 2½" × 2½" Flat Plate 5. Two Flat Trunnions 6 are bolted to each side of the chassis.

The model is driven by a No. 2 Clockwork Motor, which is supported on two Screwed Rods fixed in the apex holes of the Flat Trunnions 6 by nuts. One of the Screwed Rods is seen at 7. The Rods are passed through holes in the Motor sideplates, and the Motor is fixed centrally on them by nuts screwed tightly against its sides. The front Screwed Rod also holds in place a 2½" × ½" Double Angle Strip, to which are bolted two 3½" Strips 18. Between the Double Angle Strip and the Strips, however, are two Cranks 19 and 20. These overhang the 3½" Strips by one hole at each end.

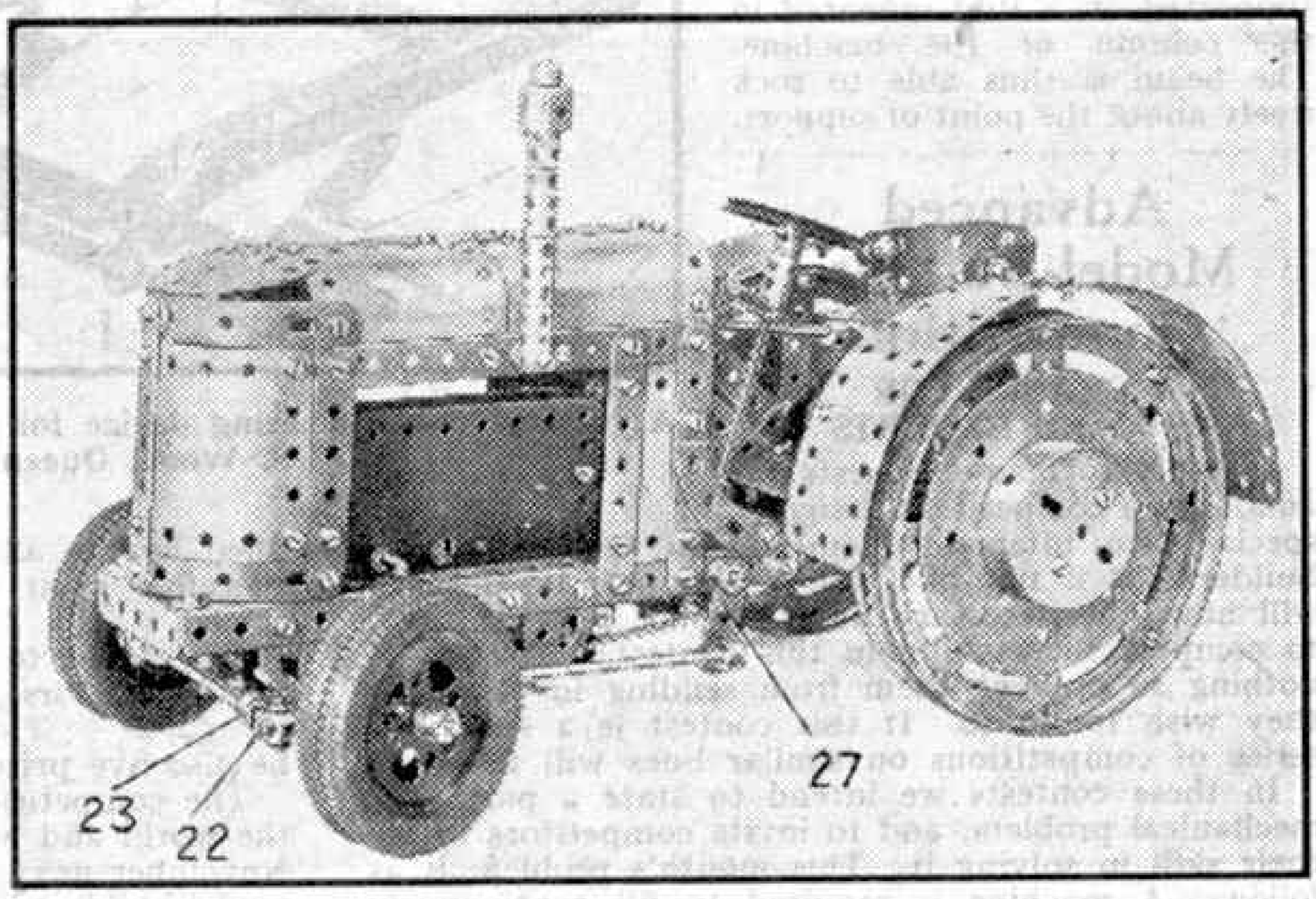


Fig. 1. A powerful farm tractor driven by a No. 2 Clockwork Motor.

Each of the front wheel units, consisting of two 2" Pulleys fitted with Tyres, is mounted on a 2" Rod held in a Coupling 21. This Coupling pivots on a 1" Rod passed into its central transverse bore, where it is gripped by a 1⅛" Bolt 22. The Rod is free to turn in the boss of its Crank 19 or 20 respectively, and a Collar on its lower end holds it in place. Each of the 1⅛" Bolts 22 carries the spider of a Swivel Bearing, one of which is seen at 23. A 3½" Rod inserted in the bosses of the Swivel Bearings links them together.

One of the Couplings 21 (Fig. 3) is pivotally attached to a Fork Piece 25 fixed on one end of a Rod 26. The rear end of the

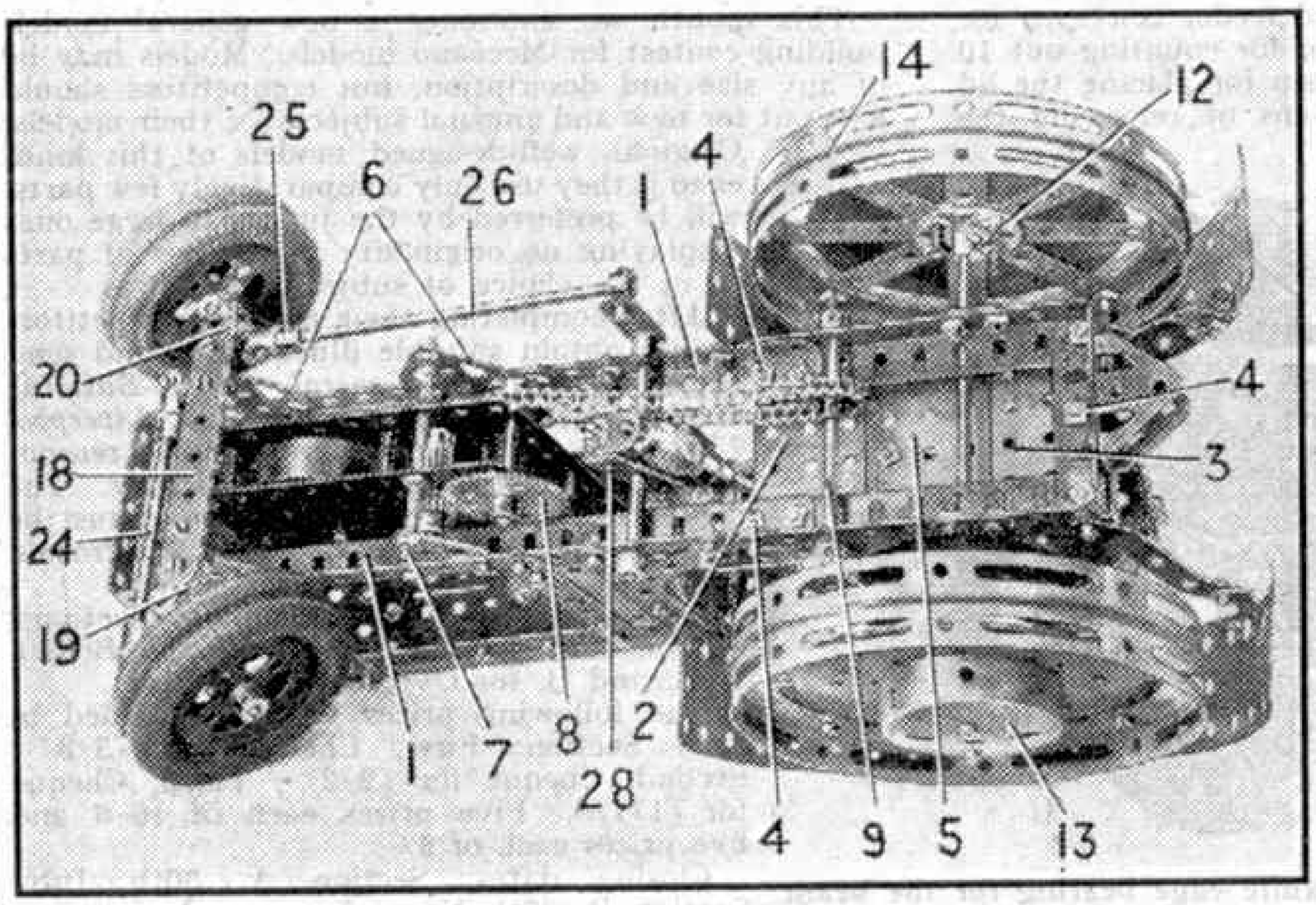


Fig. 2. An underneath view of the tractor.

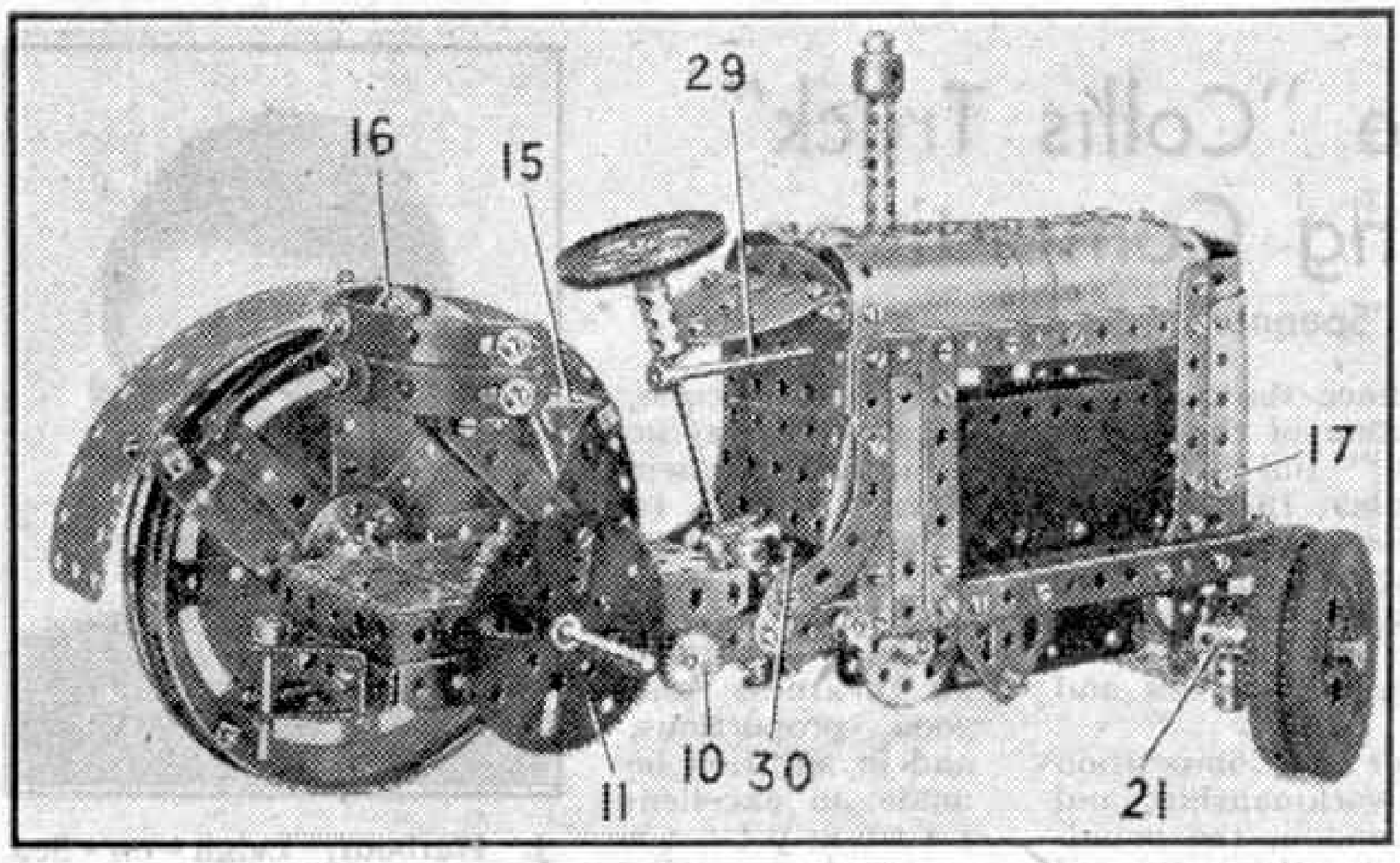


Fig. 3. The tractor with one of the rear wheels removed to show the drive arrangement to the rear axle.

Rod is gripped in a Collar, which is screwed by one of its threaded holes on to a Bolt fixed by a nut in the end hole of a Crank 27 (Fig. 1). The Crank in turn is fast on a Rod mounted in the chassis side members, and it carries at its centre a $\frac{1}{2}$" Pinion and a cage 28 consisting of two $1\frac{1}{2}$" $\times \frac{1}{2}$" Double Angle Strips bolted together and carrying at each end a Fishplate. The Pinion is placed on the Rod inside this cage.

The steering column passes through a $1\frac{1}{2}$" Strip attached to a Semi-Circular Plate at the rear of the engine housing, and at its lower end through two Fishplates attached to the cage 28. Between the Fishplates it carries a Worm that engages the $\frac{1}{2}$" Pinion in the cage. The column is held in place by two Collars placed against the sides of the upper Fishplate.

The driving shaft of the Motor carries a $\frac{1}{2}$" Pinion that engages a 57-teeth Gear 8 on a Rod journalled in the Motor sideplates. This Rod carries at its other end a $\frac{3}{4}$" Sprocket Wheel, which is connected by Chain to a second $\frac{3}{4}$" Sprocket mounted on a Rod 9 journalled in the chassis and held in place by Collars. Rod 9 carries a $\frac{3}{4}$" Pinion 10, and this engages a $2\frac{1}{2}$" Gear Wheel 11 on the axle of the rear wheels. Bearings for the Rod are provided by two 1" Corner Brackets, bolted one to each of the chassis sidemembers.

Each of the rear wheels consists of two Hub Discs bolted together. On the inner side of each wheel is a Bush Wheel 12 and on the outer side a 4" Circular Plate and a Boiler End 13. Two $1\frac{1}{8}$" Bolts hold the Boiler End, Circular Plate and Bush Wheel in place. The Bush Wheel is also held by two ordinary Bolts. A Rubber Driving Band 14 is fitted to each wheel, to enable it to grip the ground.

The driver's seat consists of a Semi-Circular Plate to which is bolted a $2\frac{1}{2}$" $\times 1\frac{1}{2}$" Flexible Plate 15, Fig. 3. An Angle Bracket at each side of the seat is extended by a Fishplate 16. The back and sides of the seat are formed by pairs of Formed Slotted Strips.

Construction of the bonnet sides is clear from the illustrations, and the top consists of six $2\frac{1}{2}$" $\times 2\frac{1}{2}$" Flexible Plates, with a Semi-Circular Plate at the front end. The curved front is formed by two further $2\frac{1}{2}$" $\times 2\frac{1}{2}$" Flexible Plates fastened by Bolts 17 at each side to Fishplates attached to the vertical $3\frac{1}{2}$" Strips.

The reversing lever of the Motor is attached by an End Bearing to a Rod that has a Collar at its end to serve as a handle. A Corner Angle Bracket is bolted to the brake lever of the Motor, and to the free lug of the Bracket a Fishplate 30 is bolted. A Slide Piece representing a foot pedal is then attached by a $\frac{1}{2}$" Bolt to the elongated hole of the Fishplate.

The details of the reaper can be followed quite easily from Fig. 4.

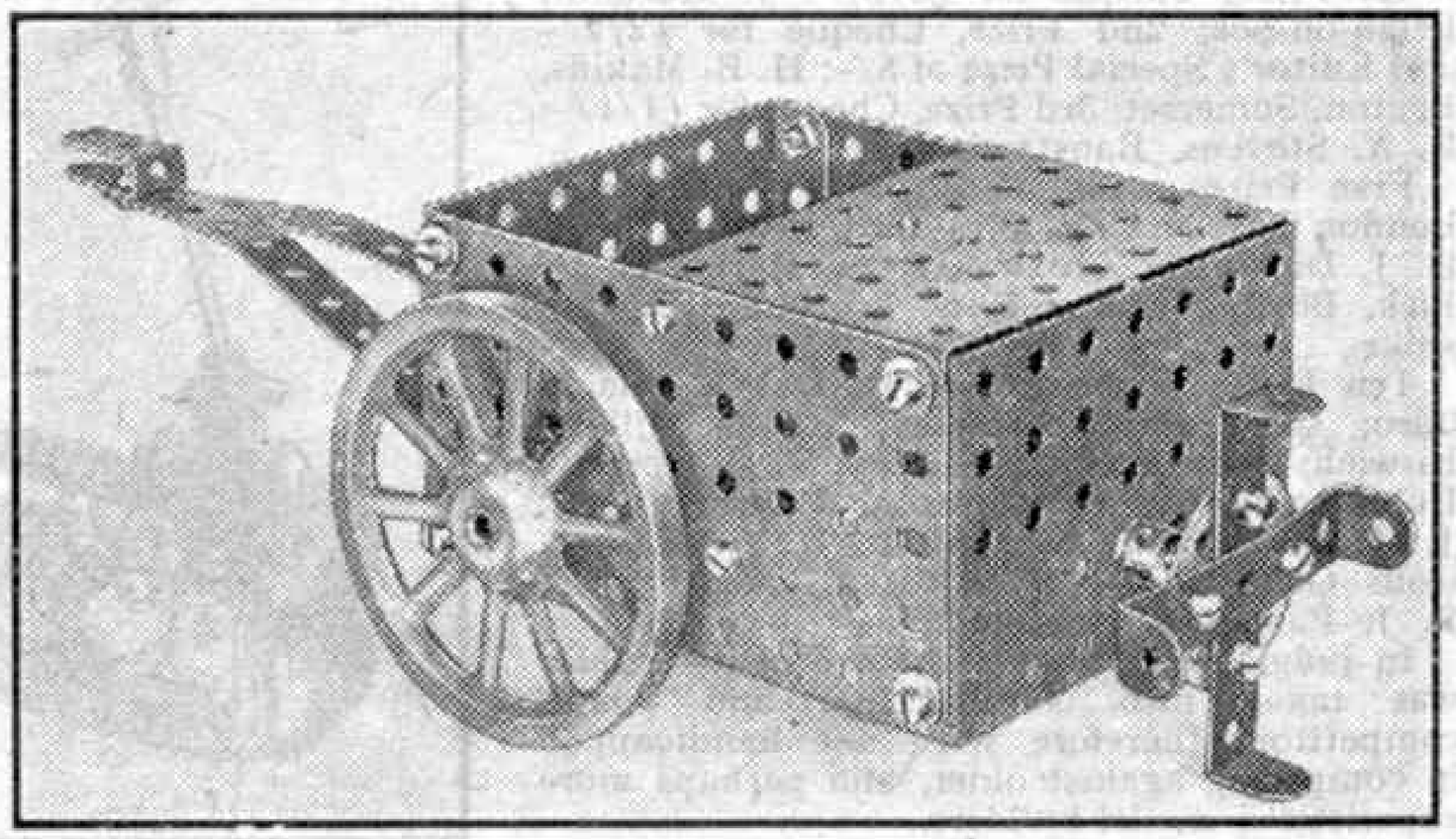


Fig. 4. This potato reaper forms an interesting implement for use with the tractor.

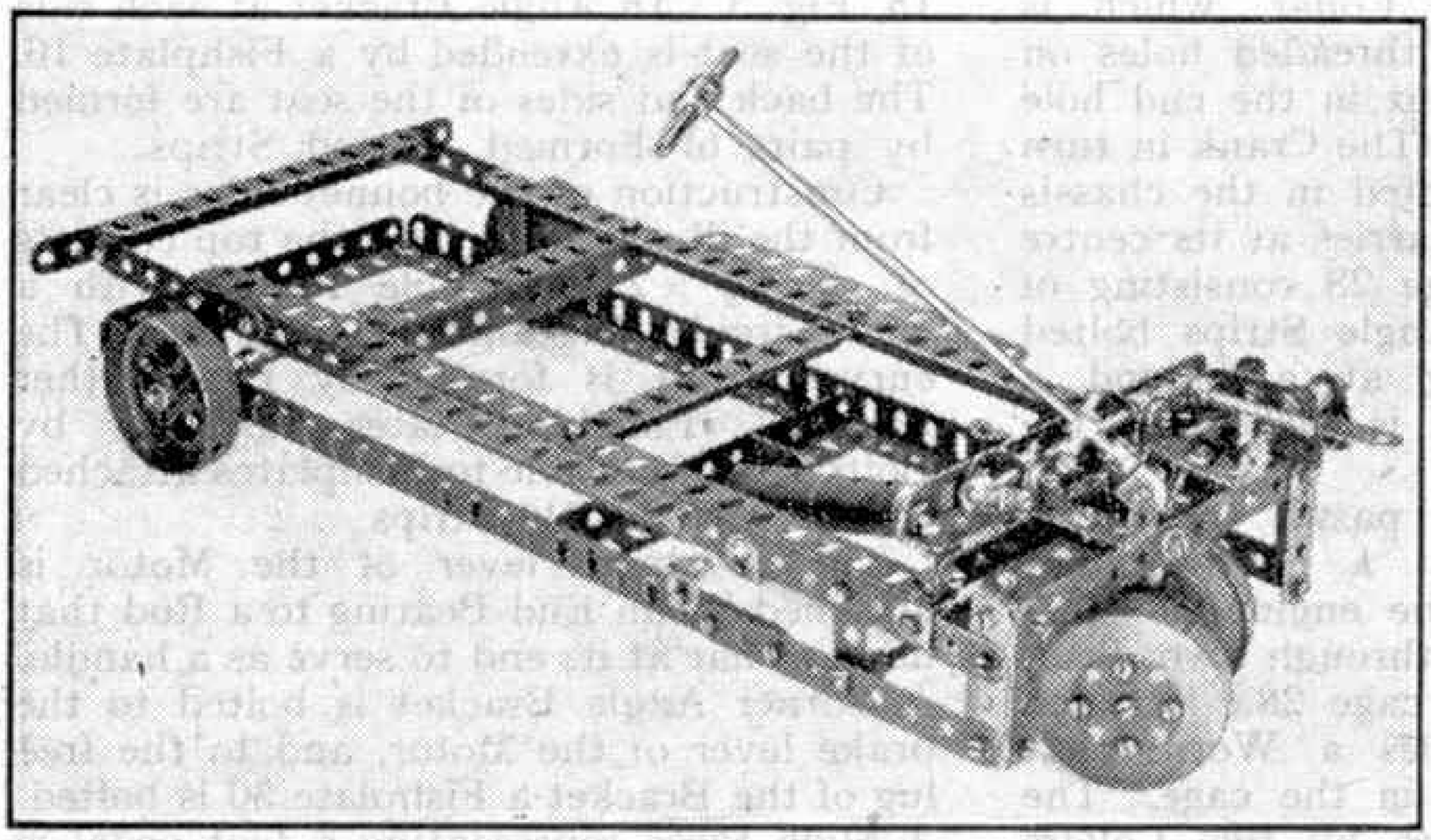
Results of the "Collis Truck" Model-Building Competition

By "Spanner"

THIS month I am able to announce the names of prize-winners in the Home Section of the "Collis Truck Model-Building Competition," full details of which were published in the November, 1948 issue of the *"M.M."* In this Competition model-builders were invited to try their skill and ingenuity in building models of the "M" Type Collis Truck, a very popular mechanical truck used for lifting and transporting raw materials or finished products in factories and workshops.

Many of the models submitted for the Competition reached a very high standard of workmanship, and Messrs. J. Collis and Sons Ltd., London, the manufacturers of Collis Trucks, were greatly impressed with the realism and accuracy with which the mechanical details of their product were reproduced.

J. Harbour, Leigh - on - Sea, winner of First Prize in the "Collis Truck" Contest.



J. Harbour's prize-winning entry in the "Collis Truck" Competition.

The entries were judged jointly by Messrs. J. Collis and Sons Ltd. and Meccano Ltd., and the distribution of awards in the Home Section of the Contest was as follows:

1st Prize, Cheque for £5/5/–: J. Harbour, Leigh-on-Sea; 2nd Prize, Cheque for £2/2/– and Editor's Special Prize of 5/–: H. B. Makins, Bruton, Somerset; 3rd Prize, Cheque for £1/1/–: E. A. Stevens, Banstead.

Five Prizes, each of 10/–: P. T. Bellamy, London S.W.20; C. E. Wrayford, Bovey Tracey; D. J. Dickinson, Croxley Green, Herts.; B. H. Pick, Boston, Lincs.; P. S. Prismall, Basingstoke.

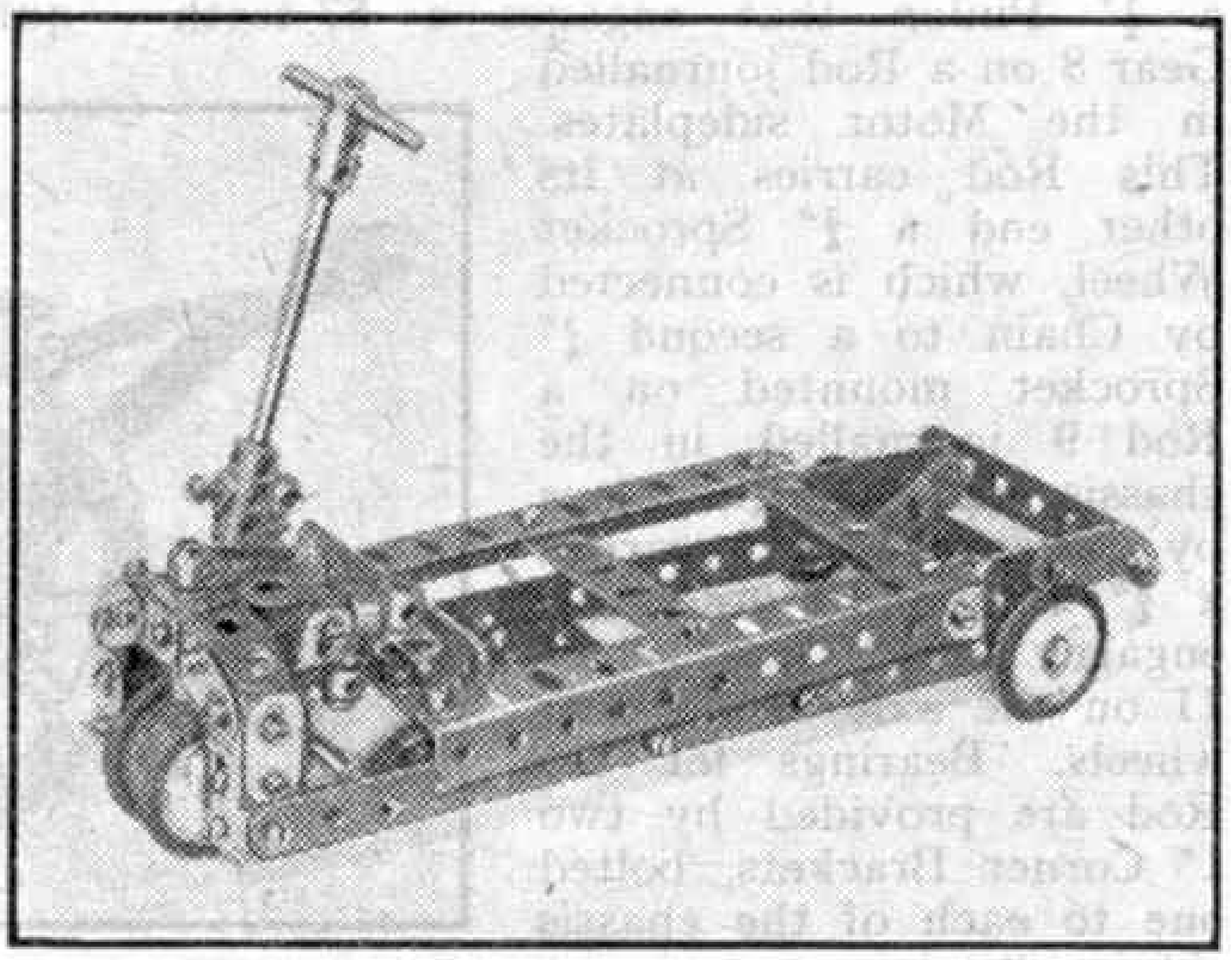
Ten Prizes, each of 5/–: D. DeWit, Blackburn; G. Crabtree, Shipley; R. J. Hilling, Ipswich; D. R. Holmes, Burnley; N. D. Horsley, Bulwell, Notts.; J. McIntosh, Edinburgh 10; J. Hollins, London N.W.7; J. K. Carter, Goffs Oak, Herts.; M. R. B. Clarke, Epsom; P. J. Patterson, Southsea.

In judging each model the age of its builder was taken into consideration and young competitors therefore were not handicapped in competing against older, and perhaps more experienced model-builders.

First Prize was won by a 14-year old boy, John Harbour, Leigh-on-Sea, whose portrait appears on this page. I wish to congratulate him on this success, because it is no mean feat to win First Prize in competition with many older enthusiasts. His model was notable for neatness and good proportions, and in addition he made an excellent attempt to reproduce the mechanical features of the Collis Truck. The model is shown in one of the accompanying illustrations.

An older competitor, H. B. Makins, Bruton, won Second Prize, and in addition to the excellence of his work in building the model itself a notable feature of this entry was the very detailed manner in which the model was described and illustrated. The illustrations consisted of really explicit and neatly executed sectional drawings, and in view of the patient work done in preparing these the Editor decided to award this competitor an extra Special Prize of 5/–.

Third Prize went to E. A. Stevens, Banstead, whose model also is shown on this page. Its chief claim to distinction is compact and neat construction, and the fitting of so much detail in such a small space is a fine achievement.



A very neat and compact model of the M-Type Collis Truck, which won Third Prize for A. E. Stevens, Banstead.

Club and Branch News

WITH THE SECRETARY

CLUB AND BRANCH PICTURES

Films are more plentiful now than they have been for a considerable time. One result of this should be an increase in the activities of Photographic Sections of Clubs and Branches, and the introduction of photography in the programmes of those in which this hobby is not at present pursued. A photographic record of Club and Branch life, especially in the outdoor season, cannot fail to be both interesting and valuable.

Where there is a Photographic Section it is easy to get good pictures of places visited and of members enjoying themselves on outings. In Clubs where there are not a sufficient number of camera owners to justify the formation of a Photographic Section there is usually at least one official or member who can be relied upon to undertake this interesting duty. This can be done without any extra expense, for members are willing to pay small sums for prints of photographs in which they appear, and the amount to be paid can easily be arranged to cover the cost of films and processing.

I shall look forward to seeing more pictorial evidence of summer season activities. Good photographs sent in will be reproduced on this page if they are suitable.

The possibilities of indoor photography also should not be overlooked. Pictures of members at work in the Club room, or demonstrating models and operating Hornby and Hornby-Dublo Layouts at Exhibitions, also form suitable subjects for reproduction in the "*M.M.*" Officials and members of a Club or Branch are always delighted when pictures of themselves appear on this page, and take pride in showing visitors copies of the issue in which they appear.

THE NEW CLUB BOOKLET

The new edition of the booklet "*How To Run a Meccano Club*" is now ready. It explains exactly how the Guild and Club movement began, and gives a full account of the manner in which a new Club is started. In addition there are many valuable suggestions for the Club programme at all seasons of the year. These are of a very practical character, as they are based on the experience of Clubs in all parts of the world.

The booklet is amply illustrated with photographs of Club groups, including many showing members at work in their Club rooms. I shall be glad to send a copy to anyone interested in the formation of a Meccano Club on receipt of a 2d. stamp.

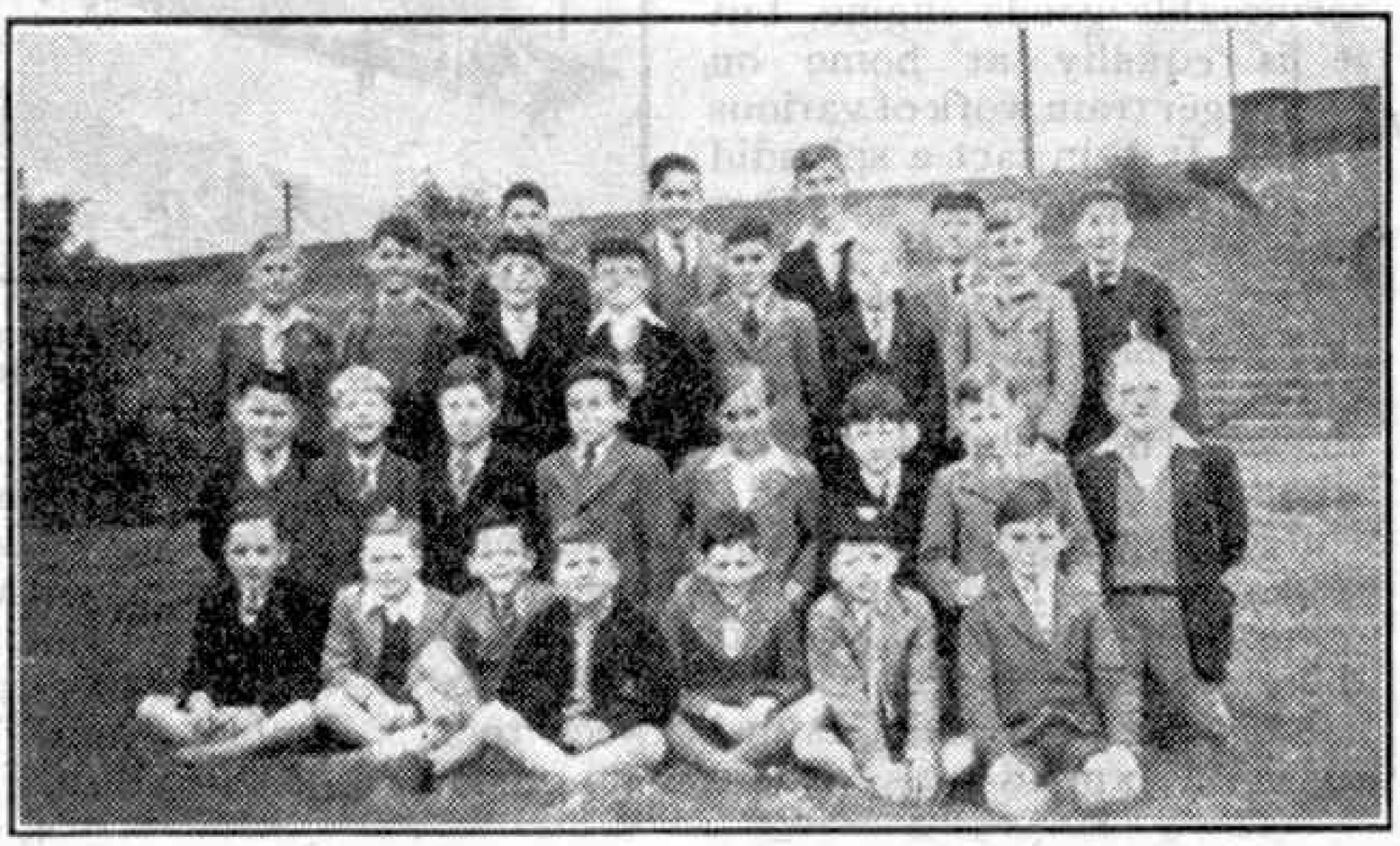
CLUB NOTES

WATERLOOVILLE AND COWPLAIN DISTRICT M.C.—An Electric Section has been formed, and members have established communication by telephone between the two buildings in which the Club meets. Land yachts have been built and tested in readiness for a race. Mr. A. J. Nicholson, President, has given a Talk on the E6 Electric Motor, with demonstrations of its use. An Exhibition is planned and several outdoor events have been arranged. Club roll: 13. *Secretary:* Mr. A. J. Nicholson, 213, Sultan Road, Buckland, Portsmouth.

WHITGIFT SCHOOL (CROYDON) M.C.—Enthusiasm is growing, particularly among the younger members. Special meetings have included a Visit to Kenview and a Quiz in which small prizes were awarded. An excellent Library, including a good stock of copies of the "*M.M.*," is now available. Club roll: 26. *Secretary:* P. J. Cousins, 20, Langley Oaks Avenue, Sanderstead, Surrey.

MAREHAM-LE-FEN M.C.—Excellent progress is being made by this new Club. Meetings are held weekly, and a good model-building programme is being pursued. Club roll: 7. *Secretary:* M. Bye, 1, Watsons Yard, West Street, Horncastle, Lincs.

SOUTH HARRINGAY PRIMARY SCHOOL M.C.—Intensive model-building is carried on. Set subjects are announced and members build models partly at home and partly at meetings. In this way excellent model lorries, windmills and aircraft have been constructed. Marks are awarded for each entry. Club roll: 30. *Secretary:* T. Newbold, South Harringay Primary School, London N.4.



Members of the Huntingdon M.C. photographed during a ramble. This Club, which was affiliated in October 1945, is under the Leadership of Mr. J. C. Deaves, Secretary, F. Saddington. Its programme is noteworthy for excellent model-building on an extensive scale, and for the many successful Exhibitions it has organized. The good work of the Club has been recognized in appreciative reports in the local press.

BRANCH NEWS

RYDAL SCHOOL (COLWYN BAY)—Recent activities have included the building of track and of scenery, and plans for a central control point for the Branch Layout are being carried out. A Debate on "*Railway Nationalization*" has been held, and two Railway Films have been shown. A visit to Crewe is planned, and preparations for the Annual Exhibition are being made. *Secretary:* K. L. Holgate, Crusaders, Rydal School, Colwyn Bay.

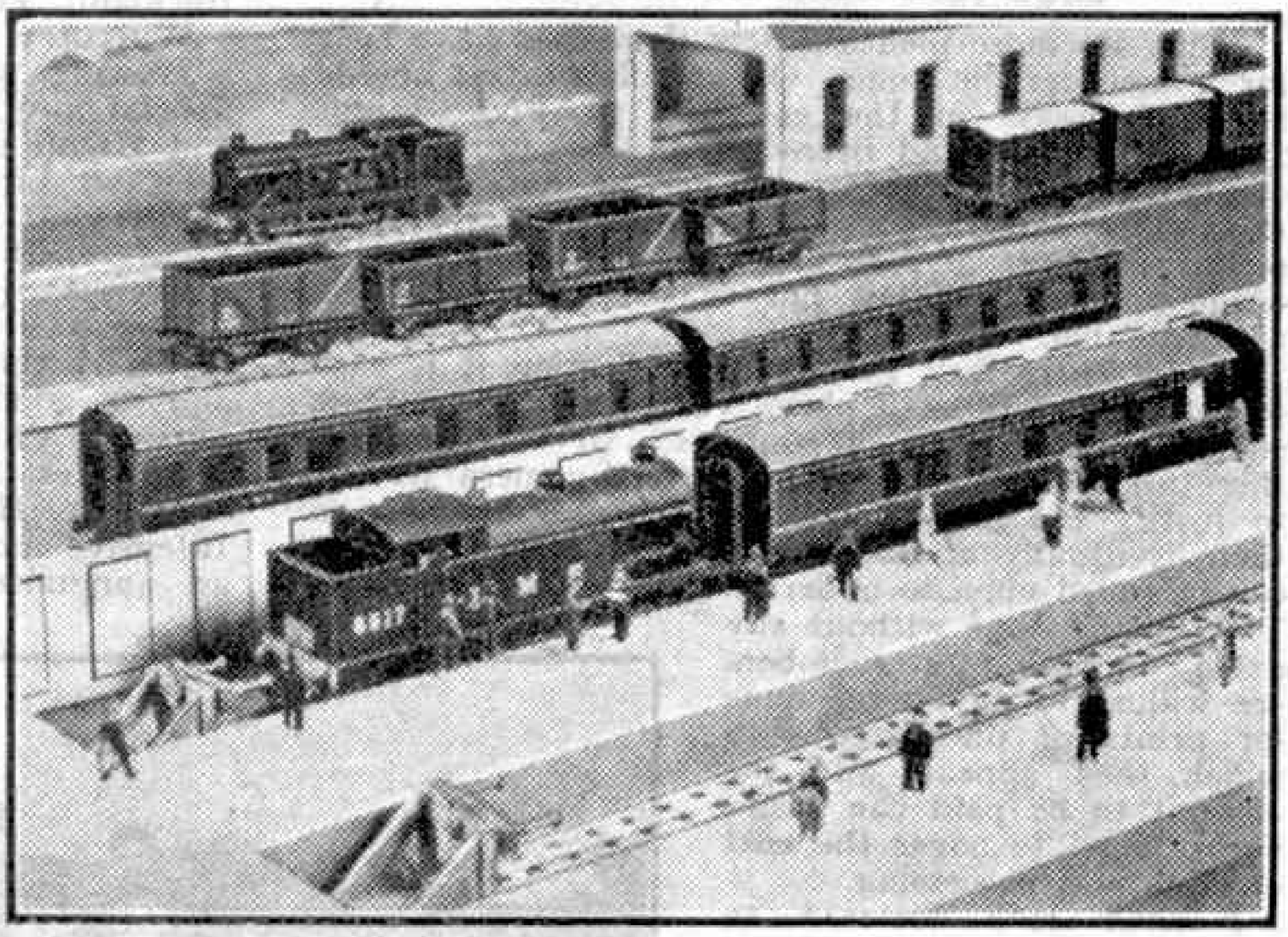
SLOUGH—An outdoor line is being constructed in picturesque surroundings. Embankments have been made, and a pond included in the scene has a miniature Suspension Bridge across it. A Signal Box is now being constructed. *Secretary:* W. Eisele, 335, Farnham Road, Slough, Bucks.

The Hornby-Dublo Tank Locomotive

THE Hornby-Dublo Tank engine is one of the most useful miniature locomotives imaginable. A tank engine, being self-contained, is always a handy unit and this is specially so on miniature layouts. It does not take up much room, and as it can run equally well either forward or backward the necessity for turning it at the end of the journey does not arise.

It is sometimes thought that the Hornby-Dublo Tank Locomotive is suitable only for freight duties because it is supplied in the standard Goods Train Set. It is a very serviceable goods engine, but it is equally at home on passenger train work of various kinds. It is in fact a splendid mixed traffic engine for other than main line duties.

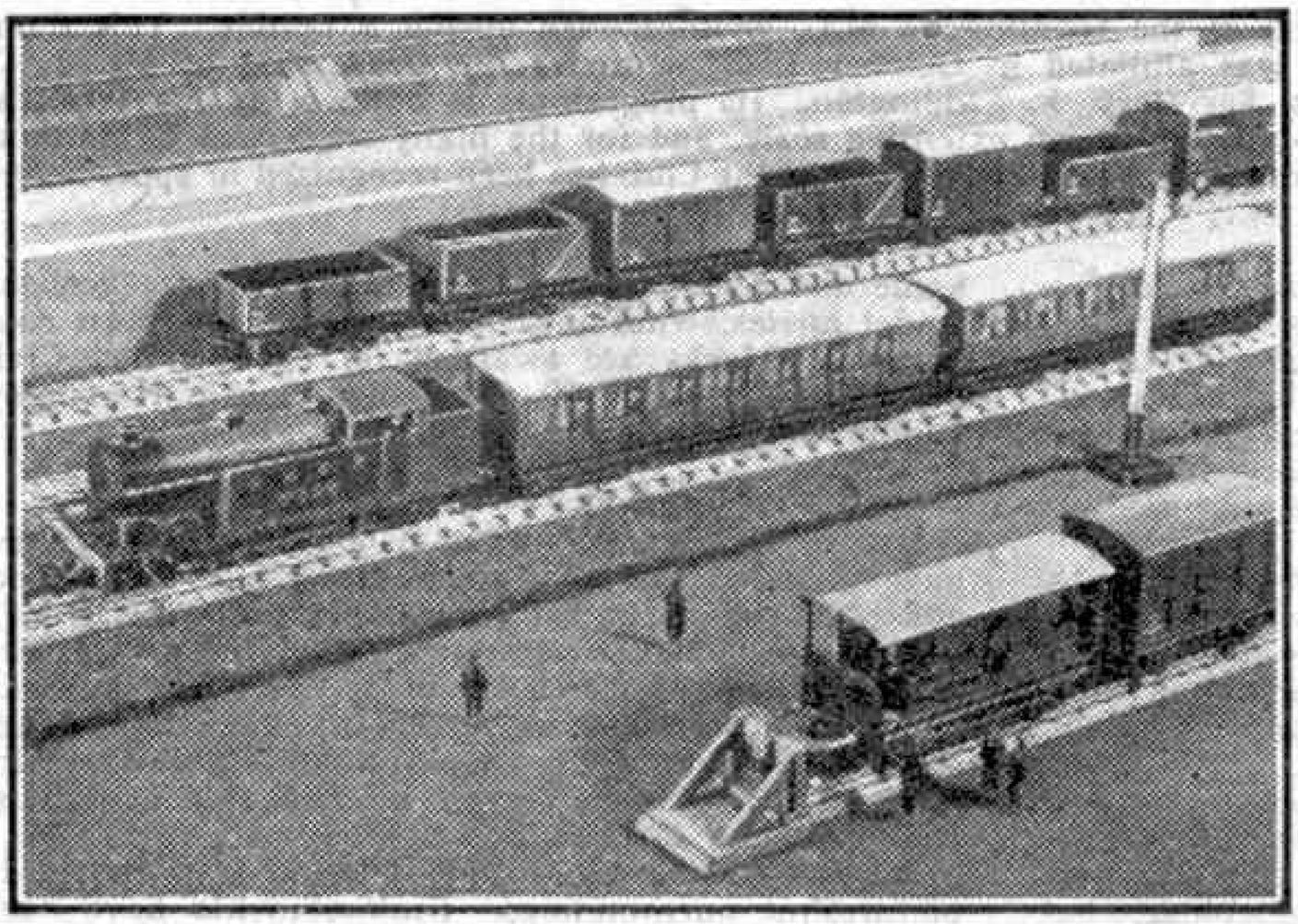
Both the illustrations on this page show Hornby-Dublo tanks at work with passenger stock. The vehicles shown are of the standard corridor types of the Hornby-Dublo range because, so far, compartment type vehicles are not available. To represent suburban and stopping trains, therefore, the Hornby-Dublo owner must use his main line vehicles in between their turns on express runs. There is no reason why this should not be done. In actual practice, main line corridor sets are sometimes made use of to form a stopping train when being worked from their stabling point to an important terminus before taking up a main line run.



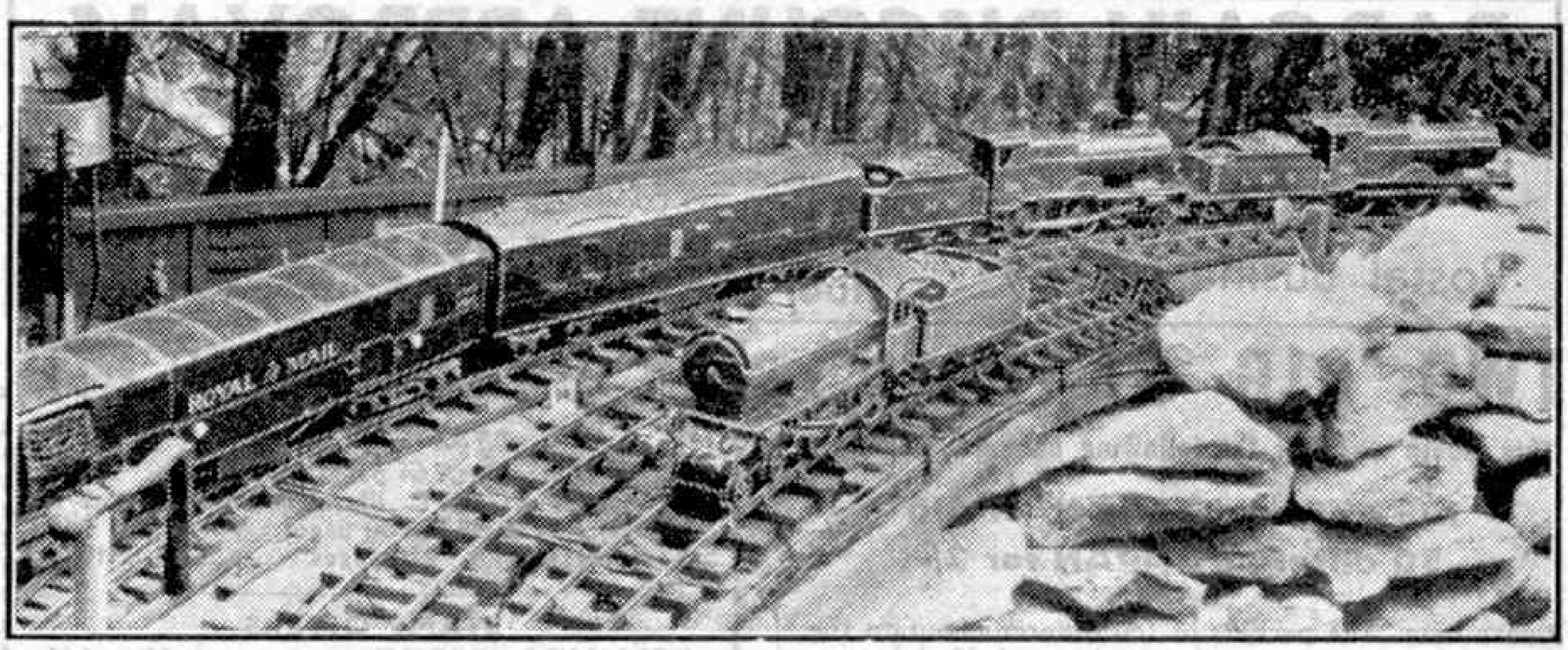
A passenger terminal scene in Hornby-Dublo. The 0-6-2 Tank with a train of empty stock ready to form an out-going express.

Besides work of this kind, the running of "empties" such as the disposal of main line trains at the end of their run, can quite well be carried out with the Hornby-Dublo Tank. On larger layouts at important terminal or through stations it is a realistic scheme to have the tank locomotive acting as "station pilot." An engine on this work performs any shunting movements that may be necessary, and will frequently marshal passenger trains ready for departure.

The general appearance of the station will be made more realistic by the presence of an engine employed in this way, as shown in the upper illustration. Although this typical station scene includes miniature figures on the platforms to give an appearance of life and bustle, it must be pointed out that these attractive little accessories are not yet available, but they will re-appear in the Hornby-Dublo range later on.



A stopping train represented by Hornby-Dublo L.N.E.R. stock headed by a standard 0-6-2 tank. The latter is an excellent engine for this type of work.



A double-headed mail train rounding a curve on the outdoor layout of Mr. C. B. Smith, Lincoln. Each of the engines shown is a Hornby 4-4-0 of pre-war manufacture.

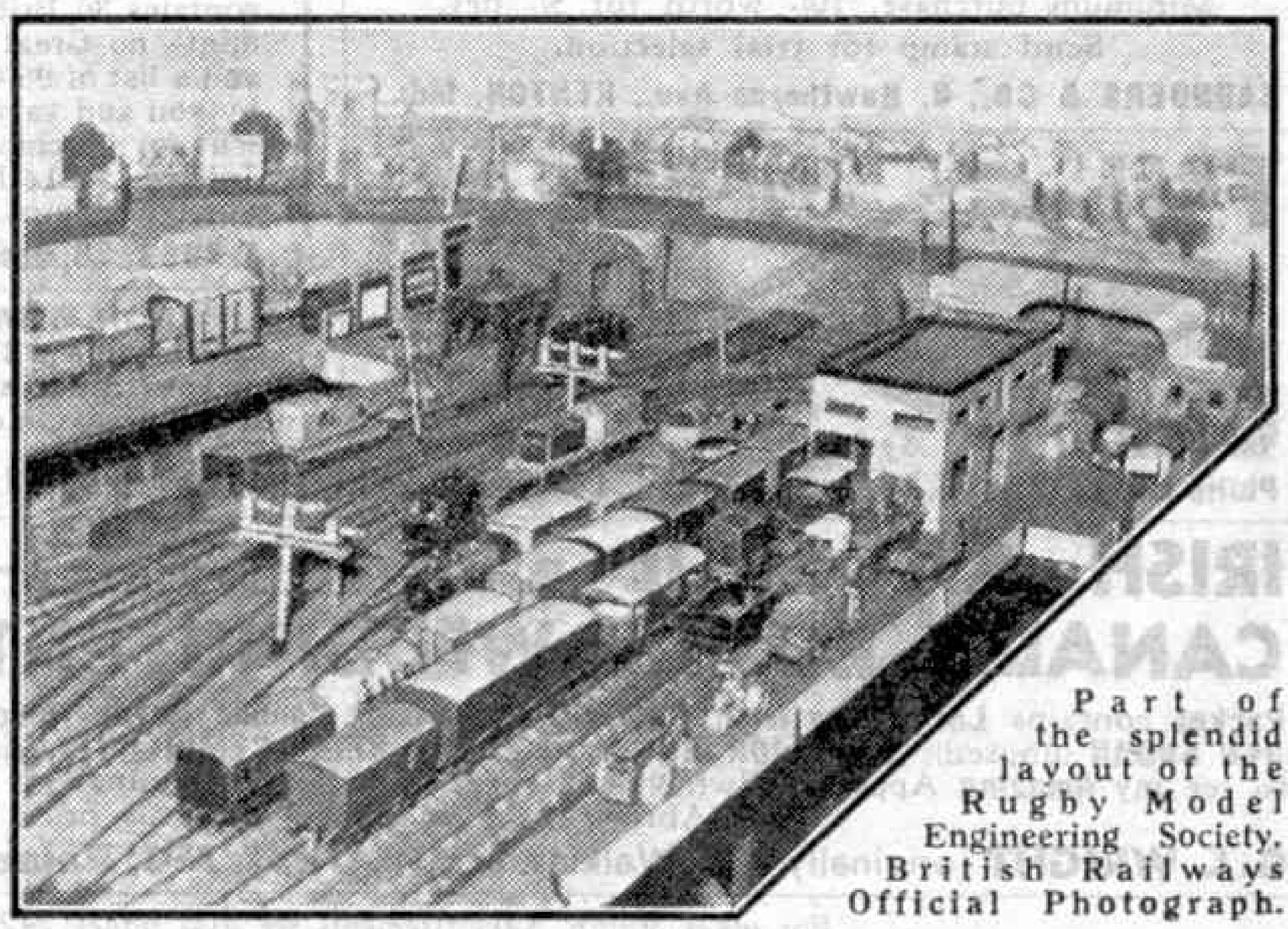
Hard Work by Hornby Locomotives

EACH of the photographs on this page shows part of two realistic miniature railways on which Hornby Clockwork Locomotives carry out a great deal of hard work. The upper picture shows the curve at *"Lakeside"* on the outdoor system of Mr. C. B. Smith, Lincoln, which has been referred to several times in these pages as the *"Bincliff, Lakeside and Shedley Railway."* The two L.M.S. 4–4–0 engines shown heading the "Royal Mail" train have been in continuous service since well before the war and must have covered many actual miles.

The other engine shown is also a Hornby Locomotive of pre-war L.N.E.R. type that is employed chiefly on fast freight traffic. Clockwork is the principal motive power on the *"Bincliff"* line, although two steam locomotives are in use and experiments have been made with electric traction. For the time being however, the bulk of the regular train services are clockwork hauled.

The layout in the lower photograph is situated at Rugby and it includes 150 ft. of track, five signalboxes, four stations, a coaling stage, a locomotive testing station and automatic level crossing gates. This is owned by the Rugby Model Engineering Society and its construction has been principally inspired by Mr. Frank Renshaw, a Locking Fitter on the London Midland signal maintenance staff. Mr. Renshaw, who started the Rugby Society ten years ago, spends all his spare time in this fascinating pursuit.

On Track Nights his "staff" operate this miniature railway, manning the signal boxes, "Control" and the marshalling yards. Goods trains and passenger trains including various Hornby locomotives and rolling stock are run, calling at stations in accordance with the working arrangements. Signalmen exchange messages by bell codes and, in fact, practically the whole of the real Rule Book comes to life.



Part of the splendid layout of the Rugby Model Engineering Society. British Railways Official Photograph.

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For other Stamp Advertisements see also pages 242 and xi.

Stamp Collecting

An Inventors and Explorers Issue

By F. Riley, B.Sc.

ALMOST an avalanche of stamps has poured in from certain Eastern European countries in recent months. It is at least doubtful if most of these have been intended to serve any real postal purpose; they seem rather to have been issued either for propaganda or just to raise money for various purposes. They include many commemoratives of men and events that may be of genuine interest in the countries concerned, but are practically unknown to the rest of the world. Occasionally remarkable claims have been made on behalf of those portrayed. One strange example came from Yugoslavia, where a series of four stamps marked the 80th anniversary of the death of Laurence Kosir, described as "the idealogical creator" of the first postage stamp, whatever that may mean. Stamp collectors and the world in general no doubt will continue to pay tribute to Rowland Hill and to Britain's famous "Penny Black."

One of the countries that has joined in this spate of commemorative stamps is Hungary, but here a different view of subjects appears to have been taken in certain instances. Various purely Hungarian matters of course have been commemorated, but in addition there have been issues with a much wider outlook. One of them was devoted to such famous writers as Shakespeare, Byron, Goethe, Voltaire and Tolstoy, with the Americans Mark Twain and Edgar Allan Poe also included. This set appeared in September of last year, and prior to that there was a set that will be of real interest to readers of the "*M.M.*," as its 10 stamps carry portraits of famous inventors and explorers. In each of these two series at least one local name was included, presumably out of patriotism, but the other figures concerned have all received world-wide recognition.

Both sets of stamps are described as air stamps, and they are certainly attractive, for they are handsomely printed in photogravure and the designs too are quite good. In view of this there seems no reason why they should not be included in our collections, which they will certainly brighten, for they are in 10 different colours, ranging from vermilion and magenta to carmine and violet.

A good start is made with the lowest value of the inventors and explorers issue. This is the 1 filler stamp, which celebrates the invention of printing from movable types by John Gutenburg. The stamp is illustrated here; its design sets the pattern of the whole series, for in addition to the portrait there is a representation of a very early printing press and one of a modern machine. The 4 fi. value has a portrait of Robert Fulton, the American steamboat pioneer, and here the design includes representations of Fulton's first steamer "*Clermont*" and a modern liner. The 5 fi. value has special interest for British readers, for on it is a portrait of George Stephenson, the great pioneer of railways. Stephenson has never been commemorated by British stamp issues, but there have been previous stamp celebrations of his achievements in various European countries. The present effort is certainly one of the best. In the design the "*Rocket*" appears in front of a real ironclad of a steam locomotive, a ponderous engine that reminds us of the streamliners introduced on the New York Central Railroad a year or two before the war.

Two inventors figure on the 6 fi. value. One is Zeppelin, whose airships led the way in the bombing of this country in the war of 1914–18. With him is D. Schwarz, for whom the claim of having invented a balloon of some kind is made. We return to inventors of greater fame with Edison, shown on the 8 fi. value with a cinematograph projecting a picture of the Statue of Liberty on a screen. On the 30 fi. value is a portrait of Kalman Kando, a Hungarian for whom the claim apparently is made that he invented the electric locomotive, and a locomotive of his design is shown with a modern example. Alexander Popov, a Russian scientist, is portrayed on the 40 fi. value, with symbolic features of radio in the design. Popov cannot fairly be described as the "inventor of radio," but he certainly did excellent work in the early days of this form of communication.

Two of the remaining stamps of the series picture explorers, both excellent selections. The first is Columbus, on the 2 fi. value. On this stamp the portrait is flanked by a fine picture of the "*Santa Maria*," the vessel in which he first crossed the Atlantic to the New World, a map of which also is included in the design. The second is Roald Amundsen, the Norwegian who was the first to reach the South Pole. His portrait is seen on the 12 fi. value.

The portrait on the remaining stamp, the 10 fi. value, is that of Louis Bleriot, who perhaps has been included because in a way he was both an inventor and an explorer. He was the first to cross the English Channel by air.

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For other Stamp Advertisements see also pages 240 and xi.

Stamp Gossip
and Notes on New Issues

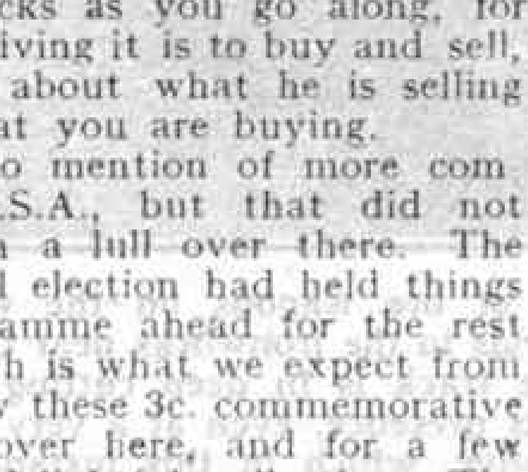
By F. E. Metcalfe

LAST month we had something to say about the rising prices for the "Silver Wedding" stamps, which are still going up and up. One or two collectors who cannot afford the high values have asked if the low values are ever likely to be valuable. To be candid the answer is an emphatic no, for many were bought by dealers and many collectors bought a number of sets. We are referring of course here to mint stamps. Used will be much better, but even thus they are never likely to be very costly, but that should not deter the genuine collector from buying a set, if one is faucied.

This question of investing in postage stamps crops up from time to time, and as many collectors spend a good deal more on stamps than they can afford to throw away on a hobby, it is only natural that they want to consider the re-sale value of what they buy. They are quite wise to do so, but please don't make that the end all and be all of your collecting; otherwise you will miss most of the fun which this grand hobby can provide. Invest if you will, but don't call it collecting or even consider yourself a stamp collector, and also be prepared for some nasty knocks as you go along, for generally the seller, whose living it is to buy and sell, knows a good deal more about what he is selling than you know about what you are buying.

Last month we made no mention of more commemoratives from the U.S.A., but that did not mean that there had been a lull over there. The upset from the Presidential election had held things back a bit, but the programme ahead for the rest of 1949 is stupendous, which is what we expect from our genial cousins. Anyhow these 3c. commemorative stamps are very popular over here, and for a few shillings one can form a delightful collection. The writer of these notes saw one of these collections the other day, which had only cost a few shillings to get together. Each pictorial stamp was given about a quarter of a page. None had cost more than 3d. and some had been obtained for nothing, and though the collector could not print, he had neatly written under each stamp the why and wherefore of its appearance.

Without a doubt German stamps are popular with a number of junior collectors, but these are setting themselves a task in trying to complete sets, for apparently a new one comes out every week. However, they are mostly cheap—some will be scarce—and a catalogue has recently been issued at 3/6 which gives good lists of these and other modern European stamps. A copy can be obtained at most stamp shops, and it is real good value. One thing that collectors will note is the fall in prices of German stamps issued during the regime of Hitler. Large stocks were found and brought over to this country. Our government also auctioned off a lot, but there may come a time when German collectors will be allowed to buy them—at present Hitler stamps are taboo in Germany itself—and that will make a great difference.



Appropos the Belgium Congo stamp illustrated last month, which depicted a railway engine, a reader asks which are the most popular stamps, those showing ships or railway trains. Ships have it by a long way. Of course there are many more of the former than the latter and it is thus a good deal easier to get a "Ships" collection together, which may account somewhat for their popularity. At the same time we British do all love ships. One of the finest of these collections was shown last year at the exhibition in Switzerland, but alas it did not obtain a prize, which is not surprising, for the only chance one generally has of getting mention at such functions is to show something which has cost a lot of money. It doesn't matter much, for few of us ever aspire to land a gold medal, or even a tin one with our collections; but that does not prevent our collecting, or enjoying the hobby to the full.

Regarding the recently issued air set of Iraq, a collector asks how many stamps were actually issued. He said he saw an advertisement where eight stamps were offered, yet in his favourite philatelic magazine only six were listed. The number eight is correct. Apparently only six values came out at the start, 3f., 4f., 5f., 20f., 50f. and 100f., but these were followed by two more, 10f. and 35f., making the eight values stated. Iraq is quite a popular country with British collectors, and a good show of used stamps can be picked up cheaply, so those looking for a new country to dabble in might like to try Iraq. Be sure the stamps collected are good clean copies, for many have heavy cancellations and look bad when they are mounted.

More than one collector has asked for details about a mysterious "lamp" which more learned philatelists talk so much about in these days. To explain the matter simply, a black metal container contains a quartz lamp and under this, when switched on, one can place a stamp. If it has been repaired, or a pen cancellation erased, this will show up under the lamp. Stamps printed with aniline ink show up in an amazing manner. Red stamps become a glowing orange, etc., and if you saw some of your stamps under the lamp you simply would not believe your own eyes, so changed do some of the colours become.

Cuba has recently issued a nice set, and as used copies are about, note might be taken of the values. There are ten stamps, from 1c. to 1 peso, and they have been recess printed by Waterlows to commemorate the centenary of General Antonio Maceo.

Our last illustration shows the stamp issued to commemorate the inclusion of Newfoundland as a Province of Canada. The ship on it is the "*Matthew*," in which Cabot sailed when he discovered Newfoundland in 1497.

Mapping Britain—(*Continued from page 212*)

suburbs built up from rectified enlargements of air films are extremely useful in such areas as large-scale railway sidings, where ground surveying is particularly difficult and slow.

On this work the Ordnance Survey collaborate with the R.A.F. Air Photography Unit. Electrically-operated air cameras used for mapping are carried in light aircraft equipped with gyroscopic control to keep the machines flying on a dead straight course and even keel. Air photographs taken must overlap one another by at least 60 per cent.; in other words, every spot on the ground will appear on at least two, and probably three successive photographs.

When the resulting mosaics are compared under a stereoscope with existing maps of the same area, the changes that have occurred since the last survey are clearly and immediately revealed. Such methods have been particularly useful in assessing the changes in town areas caused by wartime bombing. Speed is another great advantage of air over ordinary ground survey; indeed, the whole of Great Britain could, if necessary, be mapped by a squadron of aircraft in the fine days of a single summer. Yet despite these merits, the air camera can never provide a survey so detailed and complete as that made on the ground, though it gives a reasonably accurate first estimate. Air mapping —still a new science—will surely become more and more useful as it develops. But the ground surveyor with his theodolite and steel rule will remain the backbone of map-making.

Old Ship-Models—

(*Continued from page 229*)

and the old pictures and prints, we should know little of the grace and glory of the lovely old ships and the traditions that have been handed down to our modern Navy. We could not enter so fully and vividly into the lives of the sailors who fought and suffered to give Britain the lordship of the seas.

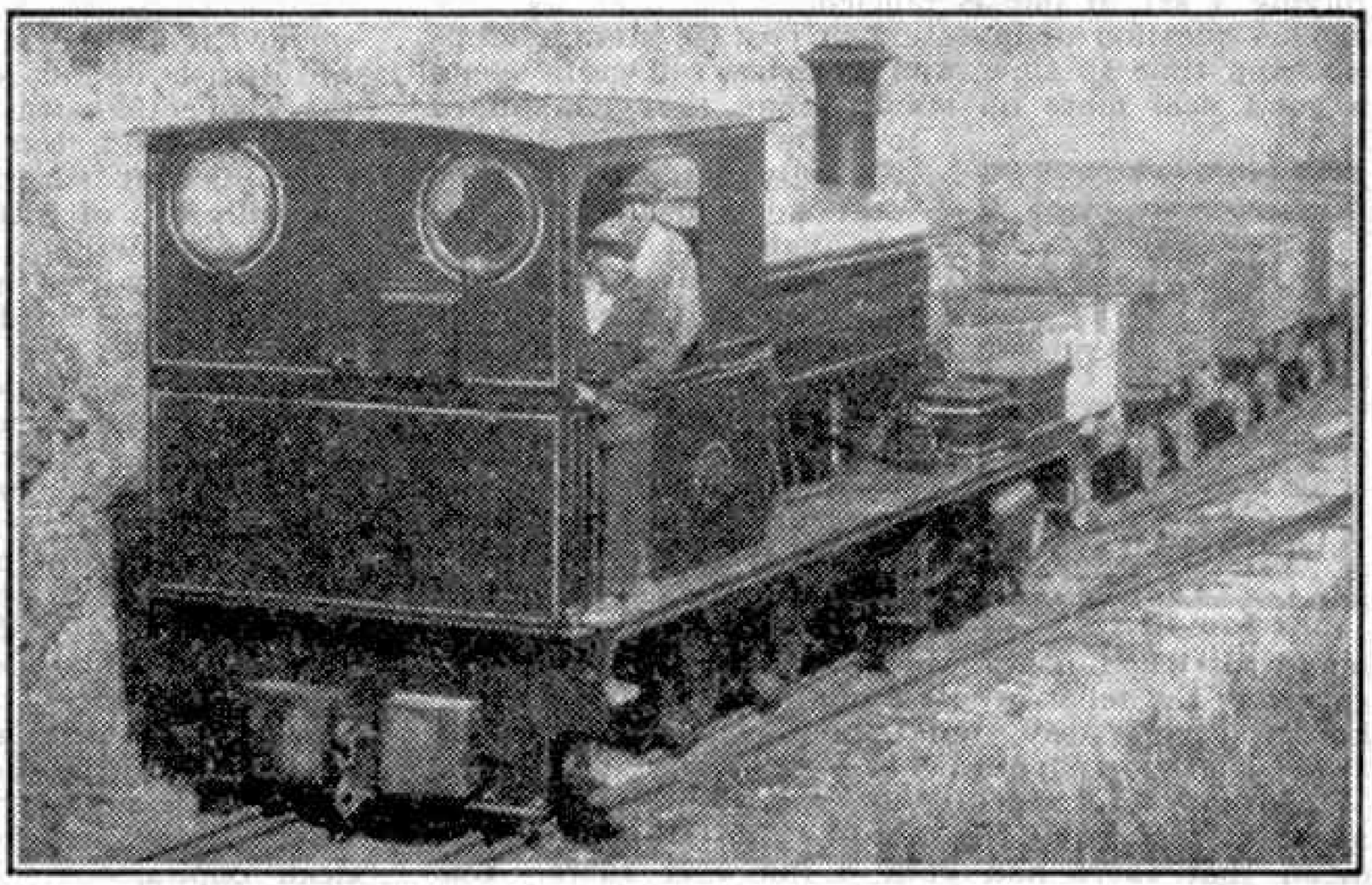
The model ships illustrated on pages 228-9 are three of those shown in a fine exhibition of old ship-models held recently at the Parker Gallery, 2, Albemarle Street, London W.1.

Noah Takes Wings—(*Continued from page 216*)

"Freighter." For a stunt, it was decided to carry a three-ton elephant inside this particular aircraft—the biggest animal ever to fly. Unfortunately, although the loading ramp stood up magnificently under the load, Jumbo was just a little too tall to get inside the machine. So Air France, who recently flew a baby elephant from Indo-China, still hold the unofficial weight-lifting championship.

There is hardly an animal species in the world that has not been carried by air at some time or other. In Australia, a 4 ft. crocodile and 10 ft. python were recently flown to Melbourne from Townsville, Queensland, and a porcupine from Perth to Melbourne. Air Contractors Ltd. have carried pedigree calves and pigs from Blackbushe to Nairobi, Kenya. B.S.A.A. flew trout eggs to South America. Penguins, baby alligators, sea lions, ducks, swans, kangaroos and a wildcat have travelled by P.A.A.; tigers, leopards, panthers, bears, squirrels and jackals by B.O.A.C.

Aircrews are by now quite accustomed to hearing assorted animal noises coming from the cabin behind them; but one Scandinavian Airlines System crew recently had to fly from Copenhagen to Buenos Aires carrying a baleful-eyed panther in a crate in their cockpit where they "could keep an eye on it." It may be a coincidence that the journey to South America broke one or two speed records but, on the other hand, it might not!



A narrow gauge train of ore wagons on the way from Rothwell in the Northamptonshire ironfields to the ironworks near Cransley. Like many similar lines in the district, the track is in deep cutting through agricultural land. Often the only clue to its presence, even at a very short distance away, is the smoke from the locomotive, which in this instance is a sturdy 0-6-0 saddle tank. This photograph was taken some years ago by K. Bishop, Leicester.

Competition Results

OVERSEAS

AUGUST 1948 NAME SQUARES CONTEST

1st Prize: T. Searson, Salisbury, S. Rhodesia. 2nd Prize: H. A. M. Cooper, Rock Bay, British Columbia, Canada. 3rd Prize: M. Pachnatz, Oxford, N.Z. Consolation Prizes: C. Tan, Singapore; M. Koliasnikoff, Brakpan, Transvaal, S. Africa.

AUGUST 1948 OLYMPIC QUIZ

1st Prize: F. Callanan, Dublin, Eire. 2nd Prize: J. A. Gomes, Bombay, India. 3rd Prize: G. Ennis, Taranaki, N.Z. Consolation Prizes: J. P. Barnes, Bridgetown, Barbados; M. Bear, Windsor, Canada.

AUGUST 1948 PHOTOGRAPHIC CONTEST

1st Prize, Section A: B. Campbell, Naples, Italy; Section B: D. Swart, Pretoria, S. Africa. 2nd Prize, Section A: J. Keith, Rangoon, Burma; Section B: A. Addison, Durban, S. Africa. 3rd Prize, Section A: K. J. Milne, Hastings, N.Z.; Section B: N. A. Macdougall, Victoria, B.C., Canada. Consolation Prizes: A. K. Banerjea, Calcutta, India; C. Formby, Johannesburg, S. Africa; J. Bush, Blenheim, N.Z.

SEPTEMBER 1948 SHIPS CONTEST

1st Prize: W. Armstrong, Auckland, N.Z. 2nd Prize: 21073323 Spr. D. J. Lawther, Kuala Lumpur, Malaya. 3rd Prize: R. Burton, Dublin, Eire. Consolation Prizes: D. J. Write, Christchurch, N.Z.; L. Poole, Melbourne, Australia.

SEPTEMBER 1948 PHOTOGRAHPIC CONTEST

1st Prize, Section A: S. H. Gerald, Wexford, Eire; Section B: C. Formby, Johannesburg, S. Africa. 2nd Prize, Section A: T. L. Fleming, Montevideo, Uruguay; Section B: I. C. Dyer, Bombay, India. 3rd Prize, Section A: F. Haughton, Brisbane, Australia; Section B: M. White, Napier, N.Z.

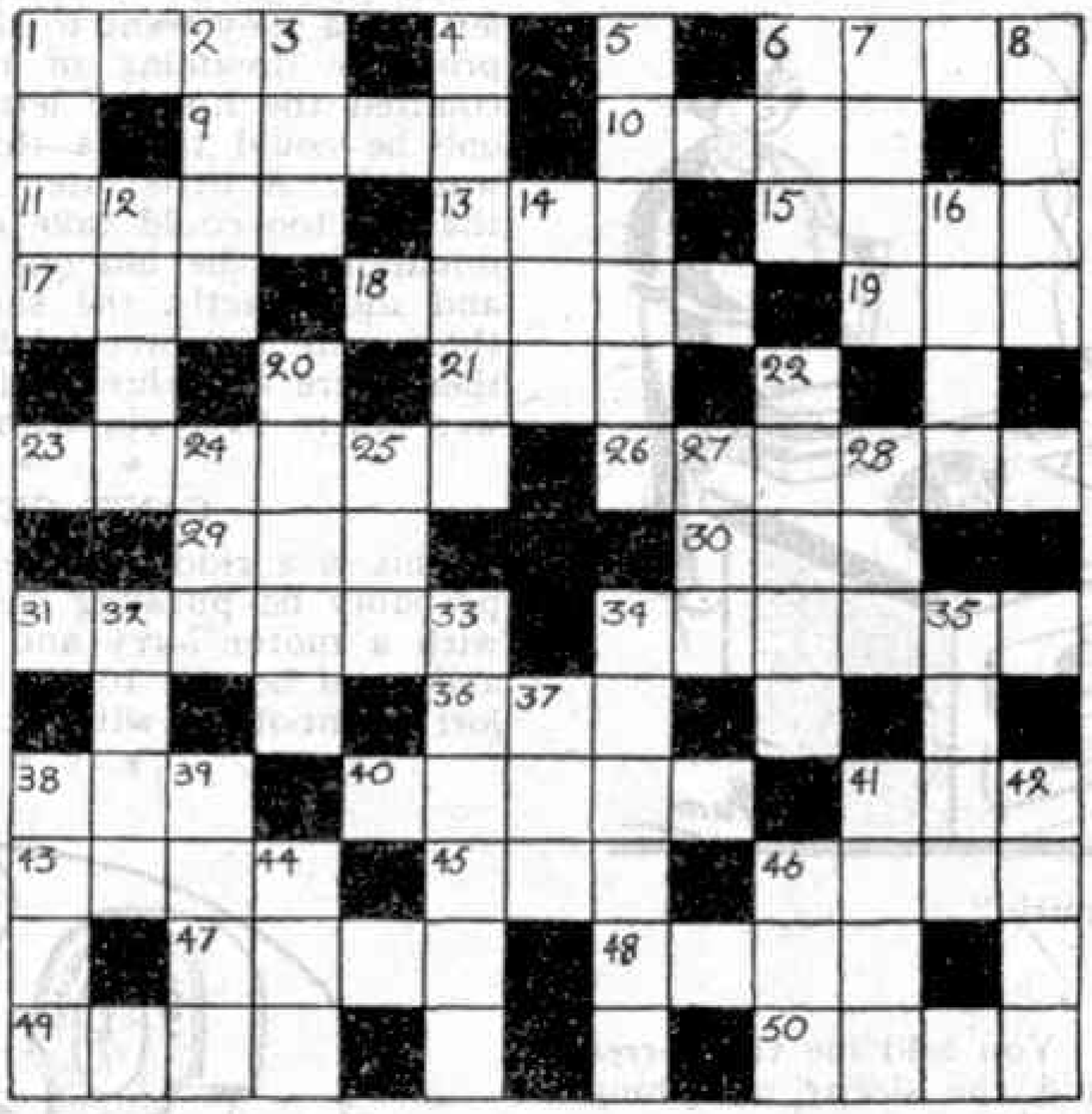
Competitions! Open To All Readers

Prize-winning entries in "M.M." competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

June Crossword Puzzle

CLUES ACROSS

1. Small stretch of water.
6. Judge.
9. Rude peasant.
10. Arab title.
11. Particular place.
13. Turn shortened.
15. Manner or style.
17. Golf term.
18. Heathen.
19. Fixed.
21. Head movement.
23. Bring to light.
26. Obliquely.
29. Former British railway.
30. Organ.
31. Underground way.
34. Occupies space.
36. Sheep.
38. Observe.
40. Hard precious stone.
41. Animal.
43. Increases.
45. River.
46. Support.
47. A separate article.
48. Strands twisted together
49. Girl's name.
50. Impetuosity.



CLUES DOWN

1. Plague.
2. Musical instrument.
3. Destiny.
4. Wandering.
5. North American State.
6. Not clearly seen.
7. Famous statue.
8. Come together.
12. Rind.
14. I myself.
16. Church dignitary.
20. Spectacle.
22. Cover thinly with metal.
24. Hostelry.
25. Anger.
27. Salt water.
28. Human skill.
32. Employed.
33. Plant of pea family.
34. Measuring instruments.
35. Rest from work.
37. Armed contest.
38. Bag.
39. Prepare for publication.
41. Bible character.
42. Stupefy.
44. Animal enclosure.
46. Animal.

This month's crossword puzzle will be found to follow the lines of previous ones set on this page, all of which have proved remarkably popular. There are no traps or alternative solutions; the clues are all straightforward, and every word used, apart from names, can be found in a standard dictionary.

There are two sections in the competition, for Home and Overseas readers respectively, and in each prizes of 21/–, 15/– and 10/6 will be awarded for the best solutions. If necessary the judges will take neatness and novelty into consideration when making their decisions.

Entries should be addressed *"June Crossword, Meccano Magazine, Binns Road, Liverpool 13."* The closing date in the Home Section is 30th July; that in the Overseas Section is 31st October.

A Railway Enthusiast Goes Wrong

A railway enthusiast proceeding on his holidays has given us the following short description of his journey. Apparently he travelled too quickly to get all the names of stations and locomotives correctly, and even the numbers of the engines are mixed. Can you put these right for him?

"I started from NSUTOE. The train was hauled by a 4-6-0 locomotive numbered 07540 and named "INATNBAIR." On the journey it passed through several well-known stations, including BGRYU, TNNAUNOE and TDOASFRF.

"The train eventually drew in at EPTNRSO, where I had to change. I had a wait of about half an hour, and spent the time looking round the station. I saw many well known types of engine. First of all a 2-4-2 Tank appeared. This was numbered 47626 and once belonged to the LAWRIR WARAILY. A minute or two later a freight train passed, hauled by No. 50454 "LRYOA SGNSAIL."

"The train for CALBLOKOP at length drew in, and I got aboard. The engine was No. 45505 of a class known as the 'DSREAHTDUGON' and this made a speedy run. On arrival at the terminal station I looked round and saw several express engines; among them were Nos. 60114 'RGINRDEEA AGRMNADUS,' and 65254 'BTARALE.' Then I gave up railway recording, and went on the sands."

There will be the usual two sections in this contest, for Home and Overseas readers respectively, and in each prizes of 21/–, 15/– and 10/6 will be awarded for the best correct versions of this remarkable railway journey. The judges will take the neatness and novelty of entries into account in the event of a tie for any prize.

Entries must be addressed *"June Railway Story, Meccano Magazine, Binns Road, Liverpool 13."* Closing dates: Home Section, 30th July; Overseas Section, 31st October.

June Photographic Contest

In this competition, the 6th of our 1949 series, readers are asked to submit photographs of flowers or gardens. At this time of the year there is a bright and colourful display in the garden, and competitors may send in either a garden scene—figures can be included if desired—or a set flower photograph.

The only conditions in this contest are 1, that the photograph must have been taken by the competitor, and 2, that on the back of the print must be stated exactly what the photograph represents. A fancy title may be added if desired.

The competition will be in two sections, A for readers aged 16 and over, and B for those under 16. Each competitor must state in which section his photograph is entered. There will be separate sections for overseas readers, and in each section prizes of 21/–, 15/– and 10/6 will be awarded.

Entries should be addressed *"June Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13."* Closing dates: Home Section, 30th June; Overseas Section, 30th September.

Fireside Fun

"Putting a pin on a fellow's chair is a worn out joke."

"Oh, I don't know." It still has its point."

• • • •

"Get my brokers, Miss Smith."

"Stock or pawn, Sir?"

• • • •

"I want my money back. You told me this ferret was splendid for rabbits, and the sleepy old thing just won't bother with them."

"That's right. It's splendid for rabbits, isn't it?"

• • • •

"Now boys, here in England I am called Mr. Key. What should I be called in Germany?"

"Herr Key, sir."

"Good. Now in France?"

"Monsieur Key, sir."

"Splendid. And in Spain it would be . . . . . ?"

"Donkey, sir."

• • • •

"What are you looking so glum for, Jones? Here I've been telling the class funny stories, and everybody sees the jokes and laughs but you."

"I don't have to laugh, sir. I'm leaving on Friday."

• • • •

"So now you're a policeman! You must find it different from being a stores assistant."

"Yes, ma'am. What I like about it is that now my customers are always wrong."

• • • •

"Why do you always sit there when visitors are due? Everyone knows you can't play!"

"Neither can anyone else while I'm here."

BRAIN TEASERS

FAMOUS FIGURES

The following sets of figures represent the names of three eminent men: 1, 20, 12, 5, 5; 3, 8, 21, 18, 3, 8, 9, 12, 12; 20, 18, 21, 13, 1, 14. Who are they?

• • • •

A SWEET PUZZLE

When sweets went off the ration, Tom, Dick and Harry took care to provide themselves with plenty when they went camping, but not very many were left when they went to sleep. During the night Tom, probably dreaming of unlimited sweets, woke up, counted the number left, and found that if he hid one he could take a third, his due share, of what was left. A little later Dick also awoke and found that he too could take a third of the number then remaining if he hid one. Before dawn Harry woke and did exactly the same thing. In the morning there were six sweets left in the bag, and of course there were also three hidden ones. How many sweets were there to begin with?

• • • •

CAN'T GET RID OF IT

This is a riddle, rather than a puzzle, but it will probably be puzzling enough. What is it that goes with a motor lorry and comes with a motor lorry, and is of no use to the motor lorry, yet the motor lorry cannot go without it? S.W.C.

• • • •

CAN YOU REVERSE?

There is a certain number of two figures such that if the figures are added together and the result is multiplied by itself, another number of two figures is obtained, in which the figures are the same as that of the original number, but reversed. What is the number?

• • • •

SOLUTIONS TO LAST MONTH'S PUZZLES

In our first puzzle last month one of the eight stations represented by circles is always without a train. To solve it trains from the following stations in order are moved along the appropriate lines to whatever station is vacant: 1, 7, 1, 2, 4, 5, 1, 6, 2, 6, 1, 3, 5, 4, 6. The number of moves is 15, and this is the least number in which the change can be made.

Jones is 36 years old, so that 20 years ago he was 16. If he had been 8 years younger he would have been only 8 years old 20 years ago.

The successive words of the pyramid in our third puzzle are A, AT, SAT, STAR, RATES and TEASER.

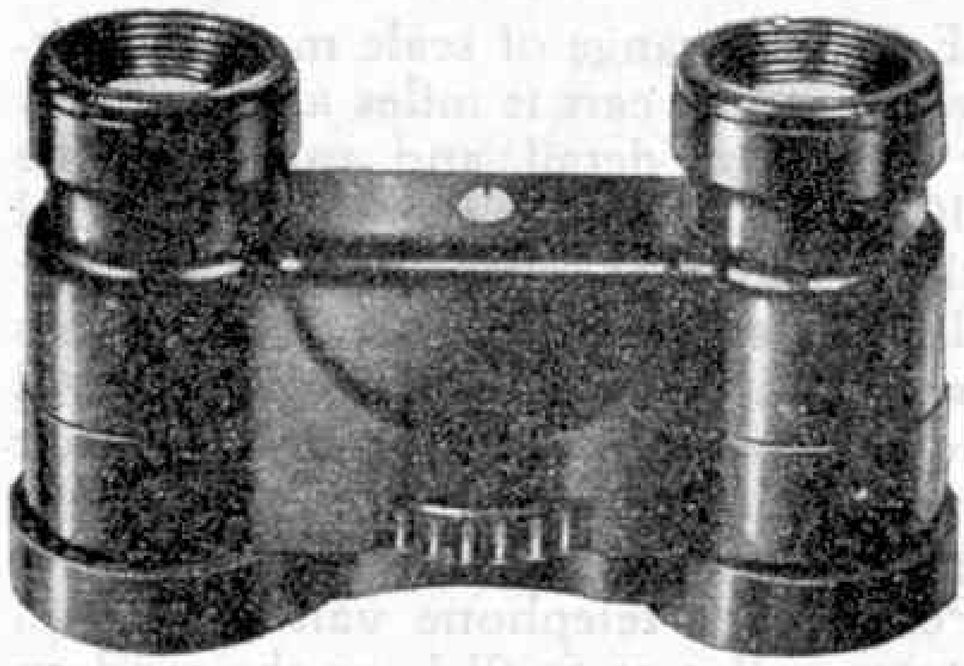
• • • •

THIS MONTH'S HOWLER

Post restante is the place where postmen have their meals while waiting for letters to take out.

Three smashing S.E.L. holiday "pals"

Imagine the fun you can have with any of these—on holiday, camping, outings, or whenever you are out-of-doors! You will get lots of pleasure and be the envy of all your friends!



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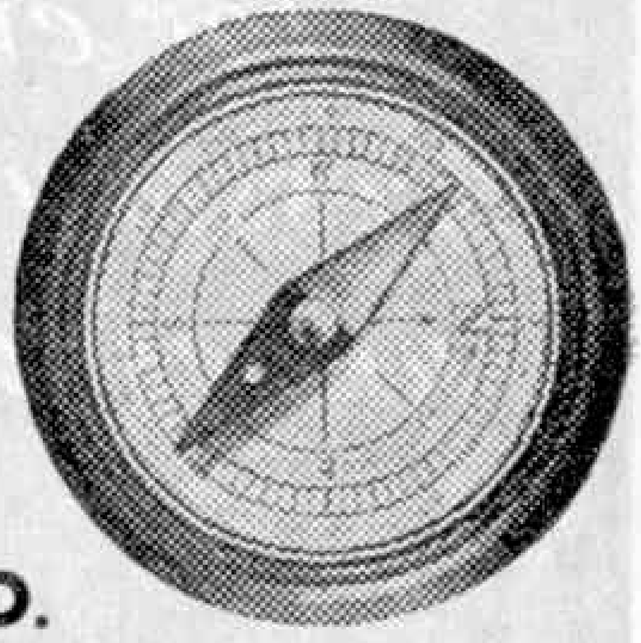

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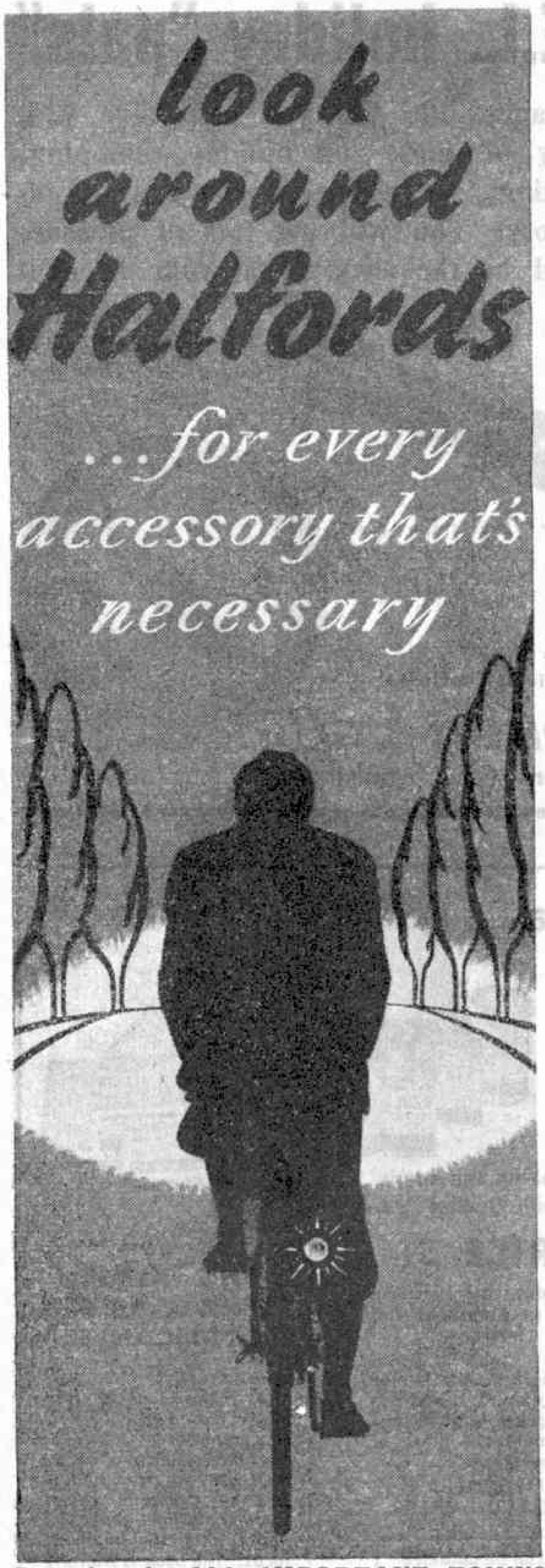

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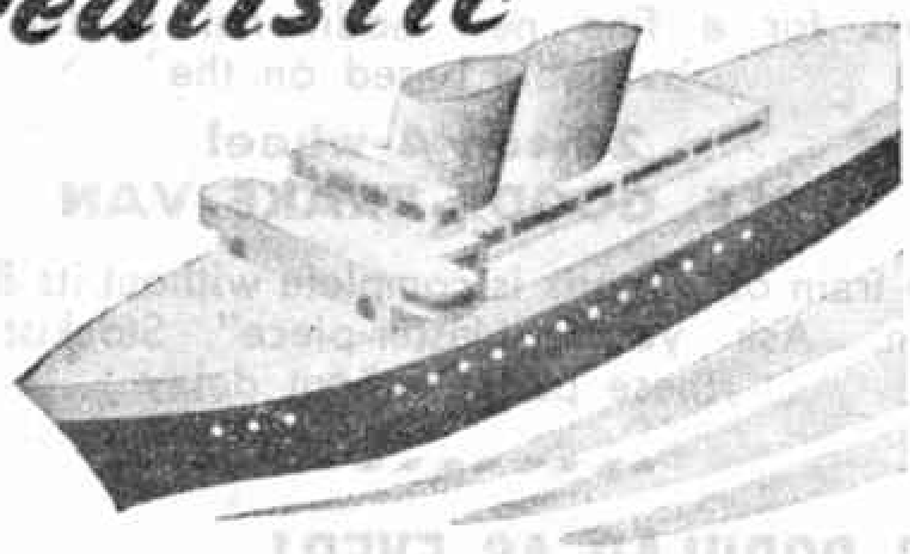

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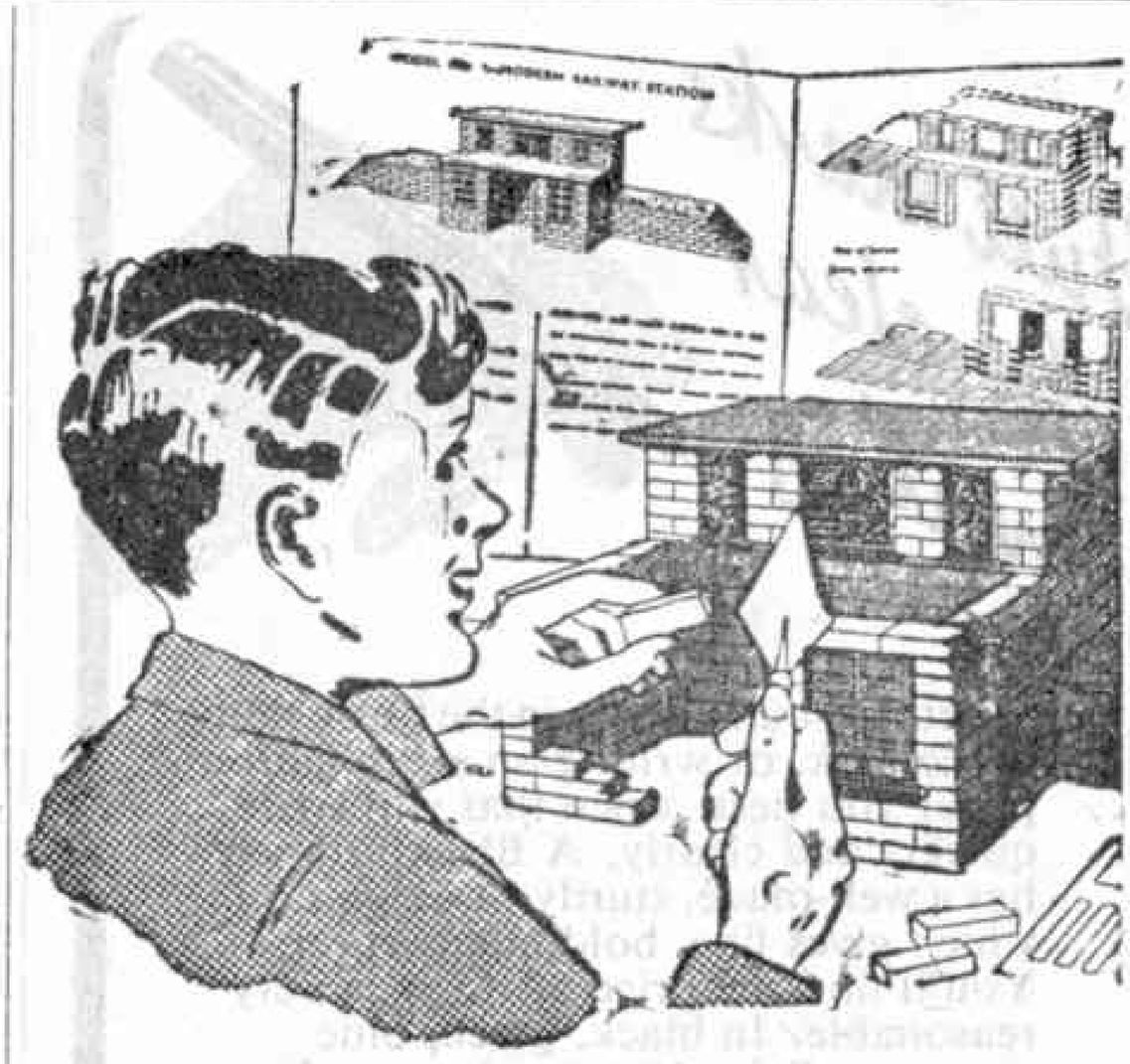

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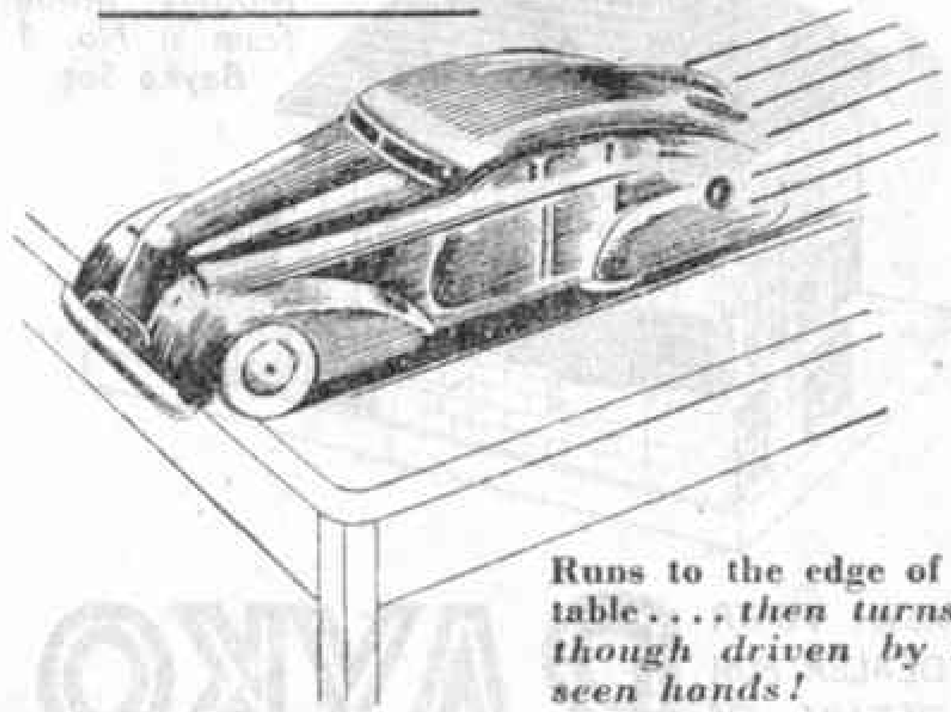

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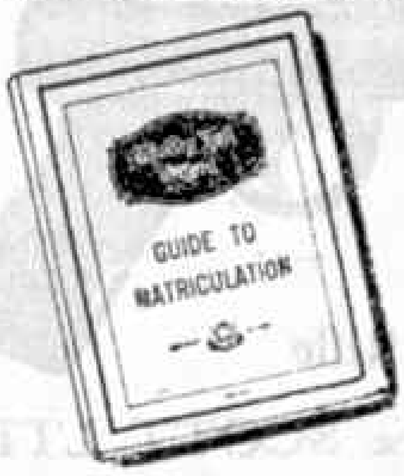

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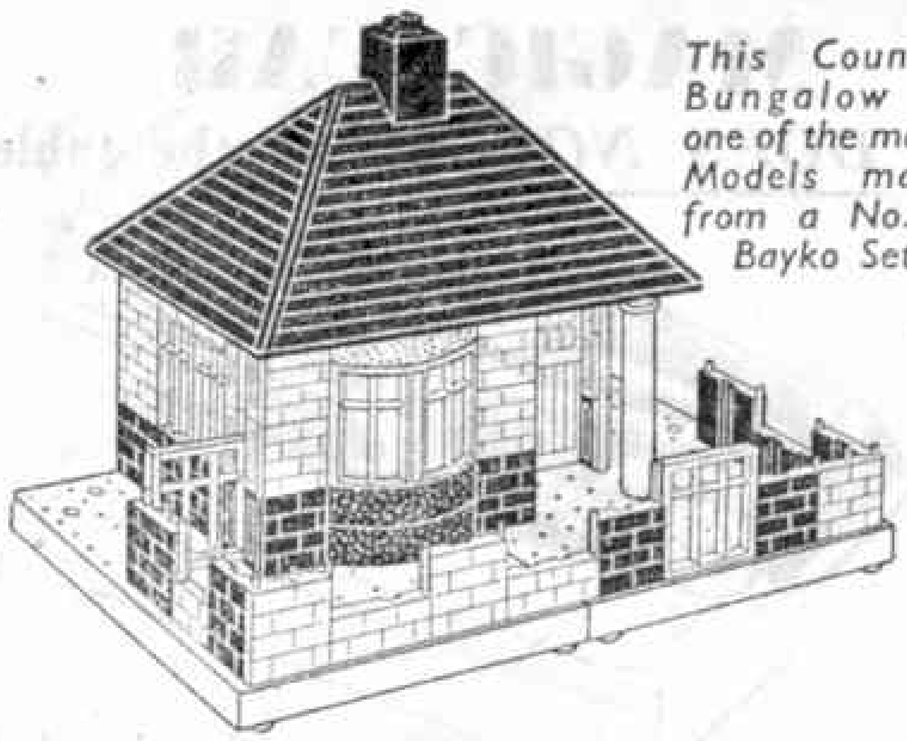

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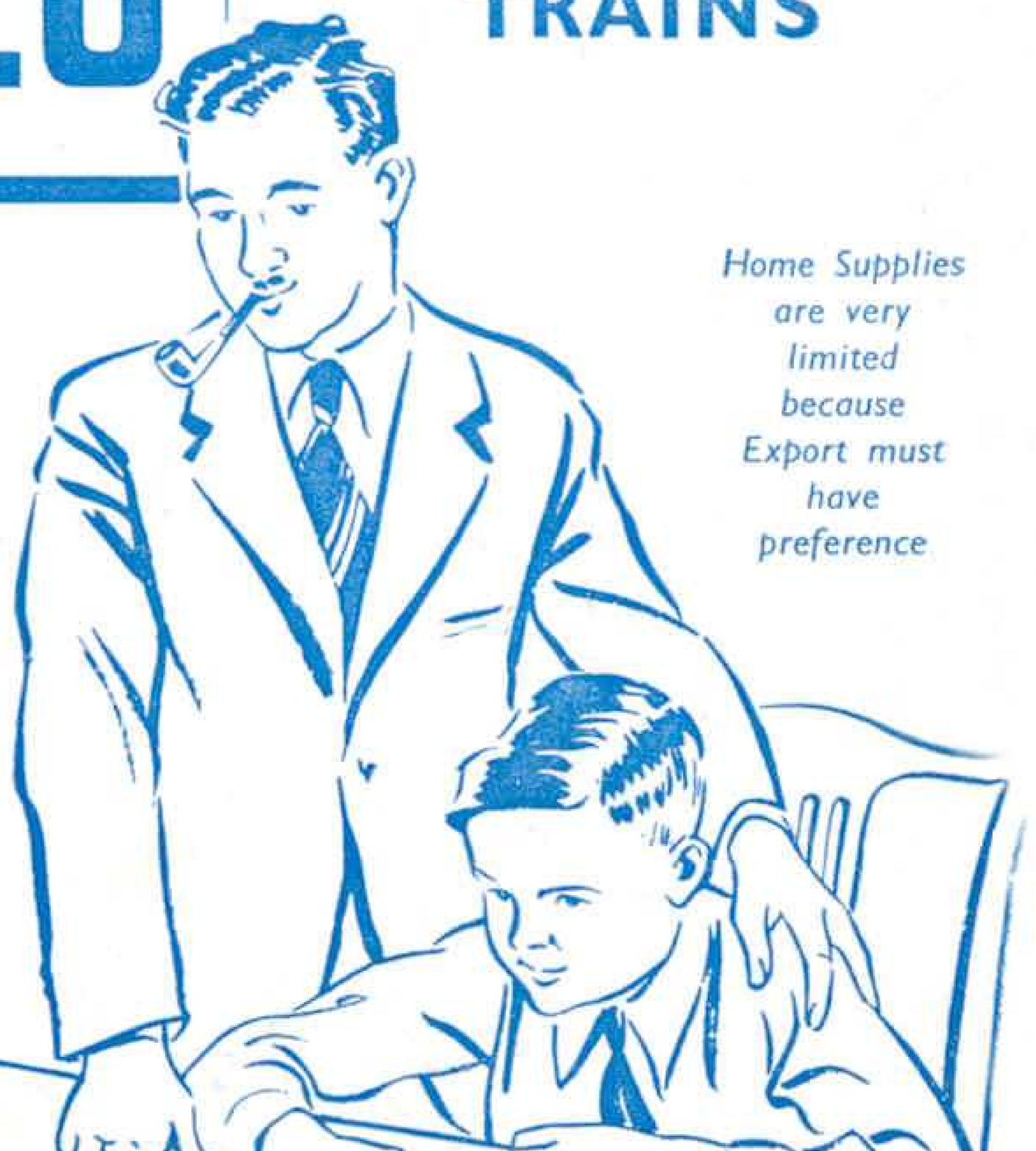

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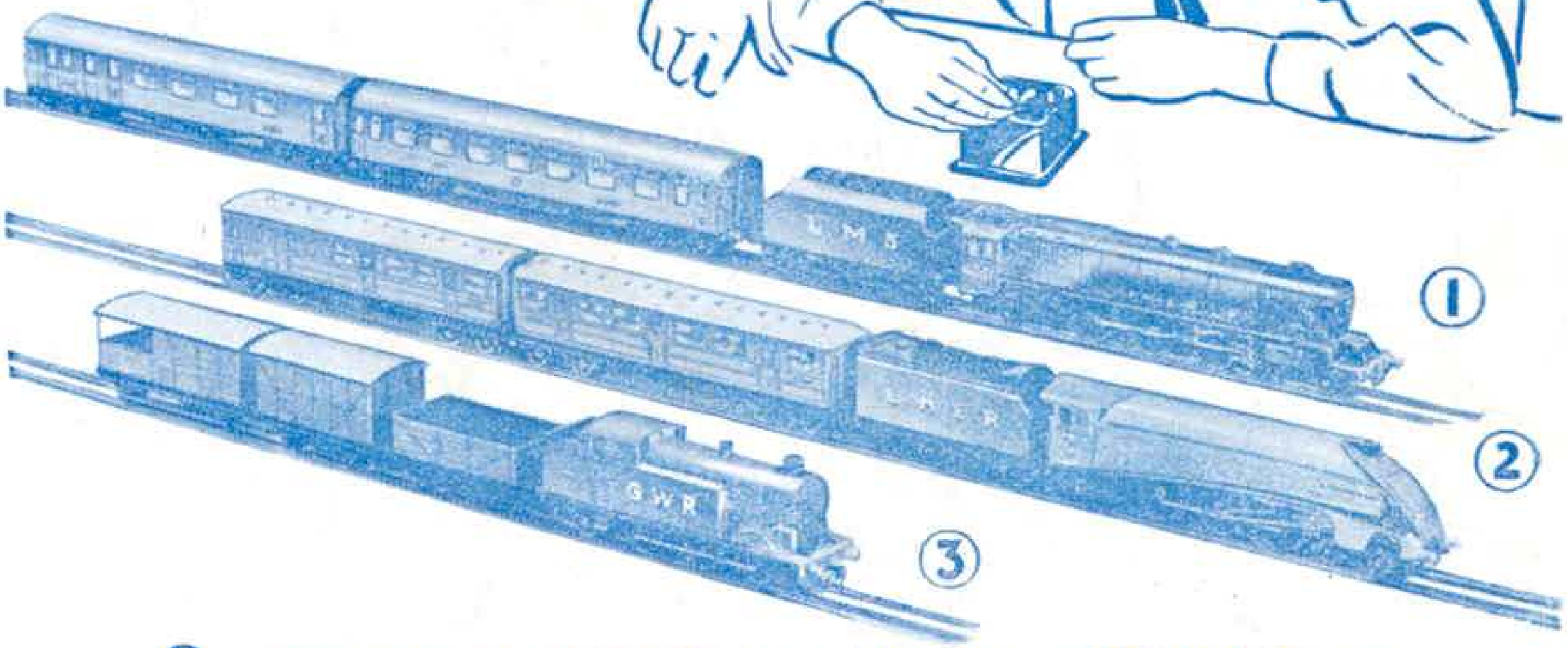

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